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BIOLOGY

Revision Book

Important Facts, Formulas & Oneliners
Chapter, Topic & Subtopic Wise

Useful for : TGT/PGT/LT-GRADE/NVS/KVS/DSSSB/GIC/GDC/Assistant Professor EMRS/AWES/DIET/AEES and Other Competitive Exam

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01.

THE LIVING WORLD

1.1 WHAT IS LIVING?

- Non-equilibrium, steady state is a - **Living state**
- Non-living things show which type of growth– **Extrinsic growth**
- Biological name of man– **Homo sapiens**
- Characteristic of living organisms– **Response to external stimuli**
- Which organism has self-consciousness– **Human**
- In the system of classification, one is not a category– **Agiospermae**
- All living organisms are linked to one another because– **They share common genetic material but to varying degrees**
- The main purpose for the classification of organisms is to– **Establish relationships amongst organisms**
- In plants, growth occurs ..... whereas in animals, it occurs ..... **Continuously, only upto a certain age**
- The statement 'nothing lives forever, yet life continues' illustrates the role of– **reproduction**
- The organisms, does not reproduce– **Mule, Worker bee, Infertile human female**
- A living organism is unexceptionally differentiated from a non-living structure on the basis of– **Responsiveness**
- The sets does not contain defining characteristics of living organisms– **Growth and reproduction**
- The defining property of living organism is – **Consciousness**
- Isolated metabolic reaction outside the body performed in test tube is– **Neither living nor non-living**
- Reproduces by fragmentations– **Fungi, Filamentous algae, Protonema of mosses**
- Organism reproduction can be considered as synonymous with worth– **Amoeba, Bacteria**
- The twin characteristics of growth are– **Increase in number of individuals, increase in mass**
- Non-living object showing growth– **Mountain, Boulder, Sand mounds**
- Characteristic feature can differentiate living from non-living– **Ability to sense surroundings**

1.2 DIVERSITY IN LIVING WORLD

- For plants, scientific name are based on agreed principles and criteria, provided in– **ICBN**
- Diversity of kinds of organisms (taxonomy) and ancestral/evolutionary relationship refers to - **Systematic**
- International code for zoological nomenclature stands for - **ICZN**
- The number and types of organisms present on Earth are collectively known as- **Biodiversity**
- Against the rules of ICBN is– **Generic and specific names should be written starting with small letters**
- Nomenclature is governed by certain universal rules. Contrary to the rules of nomenclature is– **Biological names can be written in any language**
- Diversity of kinds of organisms and their relationship is termed as- **Systematics**
- ICZN is– **International Code of Zoological Nomenclature**
- In binomial nomenclature of plants– **Both genus and species are printed in italics**
- The classification of organisms based on their evolutionary history and establishing their phylogeny on the totality of various parameters from all fields of studies is called – **Biosystematics**
- ICBN is– **International Code of Botanical Nomenclature**
- Biodiversity range is– **1.7-1.8 million**
- The title used by Linnaeus for his publication was– **Systema Naturae**
- The science of giving names to living beings called– **Nomenclature**
- The zoological name of tiger is- ***Panthera tigris***
- Biological names, hand written, should necessary be– **Underlined**
- In binomial nomenclature, the first and second components represent– **Genus and species**
- In case of mango " *Mangifera*" is generic name and *Indica* is - **Specific epithet**
- The scientific name does not ensure– **Status of threat of extinction of that organism holding**
- The word systematics is derived from– **Latin word systema**
- In Mangifera Indica Linn; Indica refers to– **Species**
- The study of different kinds of organisms and their diversities and also the relationship among them referred to as– **Systematics**
- Name of the author is not written– **In italics**
- In binomial nomenclature proposed by Linnaeus, every organism has– **One scientific/biological name with two words - a genus and a species**

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- Systema Naturae is – **Publication of Linnaeus**
- The study of anatomical physiological and ecological information of organisms development of process is basis of - **Modern Taxonomic**
- The scientific name of banyan is written as Ficus bengalensis L – **Letter L signifies taxonomist Linnaeus**
- Systematics takes into account :– **Evolutionary relationship between organisms**
- Biological names are generally in ..... and written in ..... . **Latin, italics**
- Taxonomy is not component of– **Responsiveness**
- In taxonomy the first step is – **Identification**

1.3 TAXONOMIC CATEGORIES

- Datura innoxia belong to the order and family respectively– **Polymoniales, Solananceae**
- The process by which anything is grouped into convenient categories based on some easily observable characters– **Classification**
- The Indian Botanical Garden and National Botanical Garden are situated in– **Howrah (shibpur) and Lucknow respectively**
- The branch of science dealing with identification, nomenclature and classification of organisms– **Taxonomy**
- First step in taxonomy is– **Identification of the organisms**
- As we go from species to kingdom in a taxonomic hierarchy, the number of common characteristics– **Decreases**
- Any rank of taxonomic hierarchy is used for - **Taxon**
- Binomial nomenclature system given by– **Carolus Linnaeus**
- Correct scientific name of wheat derived by binomial nomenclature is– **Triticum aestivum**
- Two-word names, the first indicates genus, and other species is called- **Binomial nomenclature**
- Scientific name of Mango ..... was first described by Carolus Linnaeus– **Mangifera indica Linn**
- In a taxonomic hierarchy, genus is interpolated between– **Family and species**
- In taxonomic hierarchy, cats are placed under the genus– **Felis**
- A taxonomic category refers to– **a rank or level in a taxonomic hierarchy**
- The ascending or descending arrangement of taxonomic categories is called– **Hierarchy**
- The term 'taxon' is used for– **any rank of taxonomic hierarchy**
- Books was contributed by Linnaeus – **Systema Naturae**
- By which process anything is grouped into convenient categories based on observable characters - **Classification**
- The word systematics is derived from the ..... word ..... which means ..... **–Latin, systema, systematic arrangement of organisms**
- Biological names are generally in Greek and written in italics– **Incorrect**
- The scientific name of banyan is written as Ficus benghalensis L. This statements is correct regarding– **Letter L. signifies the taxonomist Linnaeus**
- In printed scientific names, only the ..... is capitalized– **Genus**
- The basic processes of taxonomy– **Identification and nomenclature, Characterisation and classification**
- The main objective of plant taxonomy is– **To study the world's flora, to provide a method for identification & nomenclature**
- ..... is the branch of science dealing with identifications, nomenclature and classification of organisms– **Taxonomy**
- First step in taxonomy is– **Identification of the organism**
- Founder of binomial nomenclature was– **Linnaeus**
- Scientific nomenclature true for– **Naming of particular organism by the same name all over the world**
- Most names in biological nomenclature of living organisms are taken from ..... language– **Latin**
- In the binomial system of taxonomy developed during the 18th century by C. Linnaeus, the second word of an organism's biological name represents– **Species**
- As we go lower from kingdom to species the number of common characteristics goes on– **Increase**
- Lowest category of animal kingdom is– **Species**
- Obligate categories or ranks are found in a hierarchical level of classification– **7**
- The highest taxon in taxonomic hierarchy is– **Kingdom**
- A taxon in Linnaeus hierarchy is not– **Population**

1.4 SPECIES

- In biological terminology, a group of similar organisms are capable of interbreeding and producing fertile offspring– **Species**
- That characters are mainly considered for declaring a new plant species– **Floral characters**
- Categories which possesses maximum number of related characters– **Species**
- The basic unit upon ..... the systems of classification are based is– **Species**
- Amongst all the kingdoms, the only taxon that exists in nature as a biologically cohesive unit is the– **Species**

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- A species consists of a population is– **Interbreeding**
- Species is considered to be static– **Incorrect**
- A group of individual organisms with fundamental similarities is– **Species**
- Indica, *tuberosum* and *leo* names represents– **Specific epithets**
- The less general in characters as compared to genus– **Species**

1.5 GENUS

- Group of closely related species of plants or animals represents - **Genus**
- In a taxonomic hierarchy, family is interpolated between– **order and genus**
- Mangifera is a– **Genus**
- Genus is a group of similar and related– **Species**
- A collection of species ..... bear a close resemblance to one another in the morphological characters of the floral parts is known as– **Genus**
- Genus represents– **Group of related species of plants or animals**
- Linnaeus put similar species into a larger group called the– **Genus**
- In a taxonomic hierarchy, genus is interprolated between– **Family and species**
- The taxonomic category below the level of family is– **Genus**
- Potato, Tobacco, Brinjal, Mango belong to many genera– **3**

1.6 FAMILY

- The common characteristics between tomato and potato will be maximum at the level of their– **family**
- 'Suffixes' used for units of classification in plants indicates a taxonomic category of 'family'– **Aceae**
- The suffix - 'oideae' is used for– **Subfamily**
- Less general in characters as compared to genus– **Family**
- The taxonomic category below the level of family is– **Genus**
- The species (man, housefly, mango, wheat, dog, cat, lion, tiger, potato, brinjal, makoi and leopard) given here belong to different families– **7**
- In taxonomical hierarchy, the category below the level of order is– **Family**
- Family and order of *Triticum aestivum* (wheat) are– **Poaceae, Poales**
- Family - order - class of *Musca domestica* (housefly) are respectively – **Muscidae-Diptera-Insecta**
- Family of man (*Homo sapiens*) is– **Hominidae**
- Wheat belongs to family– **Poaceae**
- In a taxonomic hierarchy, family is interpolated between – **Order and genus**

1.7 ORDER AND CLASS

- Taxonomic categories contains organisms least similar to one another– **Class**
- A group of related families which exhibit a few similar characters is best defined as - **Order**
- In a taxonomic hierarchy, family is interpolated between– **Order and genus**
- Animals are classified into hierarchical groups, the largest number of species is found– **Class**
- 'Aves' taxonomically represent a– **Class**
- Taxonomic categories includes all the others– **Order**
- The name of a plant order ends with– **Ales**
- In ..... order, will you place gorilla– **Primata**
- Taxonomic categories includes one or more related orders– **Class**
- Two organisms are present in the same class but not in the same family. They may belong to same– **Order**
- Order polymoniales include– **Convolvulaceae, Solanaceae**
- Carnivora includes– **Canidae, Felidae**
- Order polymoniales is based on– **Floral character**
- Diptera is the order of– **Housefly**
- Dicotyledonae is the class of– **Mango**
- When organisms are in the same class but not in same family, the taxonomic term is called as– **Order**
- The category that includes related order is– **Class**
- In taxonomical hierarchy, class is interpolated between– **Phylum and order**

1.8 PHYLUM

- House fly belongs to– **Phylum - Arthropoda**
- Two animals belong to the same kingdom but different classes. They may belong to the same– **Phylum**
- In case of plants, classes with a few similar characters are assigned to a higher category called– **Division**
- Based on the common features, fishes, amphibians, reptiles, birds are included in– **Chordata**

1.9 HERBARIUM

- Taxonomic aids for preservation of plant specimens and conservation of plants respectively are– **Herbarium, Botanical garden**
- The taxonomic unit 'Phylum' in the classification of animals is equivalent to ..... hierarchial level in classification of plants– **Division**
- Quick referral system in taxonomical studies– **Herbarium**
- Two animals belong to the same kingdom but different classes. They may belong to the same– **Phylum**

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- The herbarium sheets carry a label providing information about– **Botanical name, Collector's name, Date and Place of collection**
- Indian Botanical Garden and the National Botanical Research Institute are located respectively at– **Howrah and Lucknow**
- Collection of plants that usually have been dried, pressed and preserved on sheets is called– **Herbarium**
- The quick referral system in taxonomic studies is– **Herbarium**
- In which of the taxonomical aid, the specimens become a store house or repository for future use– **Herbarium**
- Plant preservation centers in which the collected plants are preserved as dry specimens, according to any recognised system of classification is called– **Herbarium**

1.10 BOTANICAL GARDEN AND MUSEUM

- Insects are preserved in insect boxes after– **Collecting - Killing - Pinning**
- The famous Botanical Garden is– **Botanical Garden at Kew, Indian botanical Garden, Howrah, National Botanical Research Institute, Lucknow**
- Plant species in botanical gardens are labeled to indicate– **Botanical name and family**
- In museums specimens are preserved in the containers having– **Preservative solutions**
- National Botanical Research Institute located in– **Lucknow**
- Larger animals like birds and mammals are usually stuffed and preserved in– **Museum**
- The collection of preserved plants and animals for study and reference is called– **Museum**
- Museums are known to preserve– **Insects, Larger animals, Skeleton of animals**

1.11 ZOOLOGICAL PARKS

- Collection of preserved plant and animal specimens for study and reference– **Museums**
- Collection of living plants for reference– **Botanical gardens**
- Botanical gardens and zoological parks have– **Collection of endemic and exotic living species**
- Wild animals are kept in protected environment in– **Zoological parks**
- The purpose of zoological parks is– **To entertain the public, To learn their food habits and behaviour**
- Zoological parks have collection of– **Skeletons of animals, Dry plant specimens, Birds and mammals**
- Children love visiting these places, commonly called as– **Zoos**

1.12 KEYS AND OTHER TAXONOMICAL AIDS

- Most names in biological nomenclature of living organisms are taken from _____ language– **Latin**
- The places were wild animals are kept in protected environments under human care– **Zoological Parks**
- Key is called– **Lead**
- Identification of names of species found in an area **-Manuals**
- The recorded description contain information taxon is called– **Monographs**
- A taxonomical aid used for identification of plants and animals based on the similarities and dissimilarities is called– **Key**

1.13 MISCELLANEOUS

- The scientific name of dog is– **Canis familiaris**
- 'Suffixes' used for units of classification in plants indicates a taxonomic category of 'family'– **Aceae**
- As we go from species to kingdom in a taxonomic hierarchy, the number of common characteristics– **Will decrease**
- 'Suffixes' used for units of classification in plants indicates a taxonomic category of 'family'– **Aceae**
- The term 'systematics' refers to – **Diversity of kinds of organisms and their relationship**
- Genus represents– **Group of closely related species of plants or animals**
- The taxonomic unit 'Phylum' in the classification of animals is equivalent to hierarchical level in classification of plants– **Division**
- Botanical gardens and Zoological parks have– **Collection of endemic and exotic living species**
- Taxonomic key is one of the taxonomic tools in the identification and classification of plants and animals. It is used in the preparation of – **Monographs, Flora**
- All living organisms are linked to one another because– **They share common genetic material but to varying degrees**
- In the taxonomic categories, hierarchial arrangement in ascending order is correct in case of animals– **Kingdom, Phylum, Class, Order, Family, Genus, Species**
- Family Muscidae belongs to– **Housefly**
- Correct written scientific name of Mango which was first described by Carolus Linnaeus– **Mangifera indica Linn**

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EXAM POINT

Defining Properties of Living Organism	
Pheromones are– **Used for animal communication**	**Rajasthan PMT-2009, Punjab MET-2009, UP CPMT-2009, AMU-2002**
The difference between holophytic nutrition and holozoic nutrition is– **Holophytic is autotrophic nutrition, while holozoic is ingestion of solid organic food**	**TS EAMCET-10.08.2021 Shift-I**
The technically complicated feature of all living organisms– **Metabolism and Consciousness**	**AP EAMCET-05.10.2021 Shift-I**
Metabolism, replication and homeostasis are the main characteristics of– **Living organisms**	**AMU-1997**
The type of nutrition where organisms engulf food materials is– **Holozoic**	**Kerala PMT-2009**
During endocytosis– **The cell engulfs and internalises materials using its membrane**	**Karnataka CET-2009**
The living organisms can be unexceptionally distinguished from the non-living things on the basis of their ability for– **Interaction with the environment and progressive evolution**	**AIPMT-2007**
Biological organization starts with– **Submicroscopic molecular level**	**AIPMT-2007**
Many elements are found in living organisms either free or in form of compounds. One of the following is negligible is living organisms– **Silicon**	**JIPMER-2014**
On the basis of nutritionally wild type organism, which does not require any additional growth supplement is known as– **Prototroph**	**CMC Ludhiana-2009, AIPMT-2004**
Ants locate sucrose by– **Physical contact with sucrose**	**KVPY (SA)-2010**
Pheromones when secreted upon the skin surface, its odour generally affects– **mutual behaviour of members of a species**	**JCECE-2002**
Divergence in the living world	
Reason of diversity in living beings is– **long term evolutionary change**	**Manipal-2013, BHU PMT (Screening)-2010**
The first organisms to appear on earth were– **chemoheterotrophs**	**AMU-1997**
The book Micrographia was written by– **Robert Hooke**	**BCECE-2002**
Philosophic Zoologique was written by– **Lamarck**	**BCECE-2003, UP CPMT-2001**
Organisms which obtain energy by the oxidation of reduced inorganic compounds are called– **Chemoautotrophs**	**AIPMT-2002**
Out of 1.7 million species of living organisms known to us, insects contributes to about– **0.7 million species**	**CMC Vellore-2012**
In vedic times, living organisms were classified into following number of classes– **3**	**BCECE-2015**
Morphology categories Taxonomic categories	
The basic unit of classification is– **species**	**J&K CET-2013, JIPMER-2011, BVP-2009,2010, Uttarakhand PMT-2009, J&K CET-2011 VMMC-2009, J&K CET-2008, CG PMT-2007, AIPMT-2003, AIIMS-1990,2000, Rajasthan PMT-1996,1997**
The term taxonomy was coined by– A.P. **De Candolle**	**Tripura JEE-2018, J&K CET-2011, BVP-2010**
Taxon is the unit of– **Taxonomy**	**J&K CET-2013, BHU PMT-2002, Haryana PMT-2000, AIPMT-1996**
A group of plants or animals with similar traits of any rank is– **Taxon**	**BVP-2012, MGIMS Wardha-2007, AIPMT-1992, 1991**
Species is a– **Closely related interbreeding population**	**Manipal-2012, 2011, AFMC-2002**

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A taxon is– **A taxonomic group of any ranking**	**VMMC-2014, CG PMT-2007 DUMET-2006 Rajasthan PMT-2001 AIPMT-1992,1990**
Biological concept of species is mainly based on– **Reproductive isolation**	**HP CET-2012 Rajasthan PMT-2008 UP CPMT-2008**
Potato and Brinjal differ in this taxon– **Species**	**AP EAPCET-11.05.2023, Shift-II**
Theory and practice of identification, nomenclature and classification of organisms is called– **Taxonomy**	**TS EAMCET-30.07.2022 Shift-I**
A group of individual organisms with fundamental similarities is called as– **Species**	**AP EAPCET-11.07.2022 Shift-I**
The hierarchical arrangement of taxonomic categories in descending order is– **Kingdom, phylum, class, order, family, genus, species**	**NEET-2022 AMU-2012**
Taxon 'tigris' represents– **Species**	**AP EAMCET-03.09.2021 Shift-II**
Among all the kingdoms, the only taxon that exists in nature as a biologically cohesive unit is the– **Species**	**AP EAMCET-03.09.2021 Shift-II**
In the hierarchy of classification, the lowest obligatory category in five kingdom classification is– **Species**	**TS EAMCET-29.09.2020 Shift-II**
Highest unit of classification– **Kingdom**	**MHT CET 5.10.2020 Shift-I CG PMT-2006**
The Study of external features is called as– **Morphology**	**AP EAMCET-24.09.2020 Shift-II**
Classical Taxonomy is based on– **Morphological Characters**	**AIIMS-2017**
The smallest unit of classification is– **Species**	**VMMC-2011, JIPMER-1997**
Branch of biology dealing with study of organism in outer space is– **Exobiology**	**DUMET-2007**
Scientific study of diversity of organisms and their evolutionary relationships is– **Systematics**	**J&K CET-2011**
The term phylum was given by– **Ernst Haeckel**	**MGIMS Wardha-2013 AIPMT-1992**
Interbreeding population of animals is called– **Species**	**MGIMS Wardha-2003**
Ambulacral grooves are absent in the living forms of the class– **Ophiuroidea**	**Punjab MET-1999**
Phenetic classification is based, on– **Observable characteristics of existing organisms**	**Manipal-2012**
A group of related genera, with still less number of similarities as compared to the genus and species constitutes– **Family**	**DUMET-2010**
The total number of species, that are known and described range between– **1.7 - 1.8 million**	**DUMET-2010**
Taxa differs from taxon due to this being– **The plural of taxon**	**DUMET-2010**
The number of species classified in Species Plantarum– **5900**	**DUMET-2008**
The class Amphineura belongs to– **Chiton**	**Uttarakhand PMT-2004**
Class is the category of taxonomy which includes related– **Orders**	**J&K CET-2014**
The concept of "biological species" was proposed by– **Ernst Mayr**	**AMU -2000**
The taxonomist described classification of plant kingdom in "Families flowering plants"– **Hutchinson**	**MGIMS Wardha-2004**
Cladistics can be best defined as– **Method of classification that attempt to interfere phylogenetic relationship**	**AMU-2006**
If a botanist want to study nomenclature of a similar species, the scientist will study- **Isotype**	**JIPMER-2001**
The word species was coined by– **John Ray**	**J&K CET-2015**
The set of 'species' names belong to same genus– **Histolytica and coli**	**JIPMER-1996 Haryana PMT-1999**
A species is a collection of demes. The deme is a group of– **Population with a common gene pool**	**BHU PMT (Screening)-2011**

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Taxonomic hierarchy refers to– **Stepwise arrangement of all categories for classification of plants and animal**	**Haryana PMT-2003 DUMET-2009,2011**
Principles and rules of classification are studied under– **Taxonomy**	**Haryana PMT-2003**
The taxonomical ranks contain organisms least similar to one another– **Kingdom**	**CG PMT-2010, BCECE-2009 AP EAMCET-1997**
Taxonomy is the branch of science which deals with– **Identification, Nomenclature and Classification**	**CMC Ludhiana -2013**
Polytypic species are those which– **Contains two or more sub-species**	**CMC Ludhiana-2015**
It is true for individuals of same species– **Interbreeding**	**AIPMT-2002**
Phenetic classification of organisms is based on– **Observable characteristics of existing organisms**	**AIPMT-2004**
In Whittaker's system of classification, prokaryotes belong to the kingdom– **Monera**	**JIPMER-2010**
A species with several subspecies is called a– **Polytypic species**	**AMU-1995**
In which kingdom would you classify the archaea and nitrogen-fixing organism, if the five-kingdom system of classification is used– **Monera**	**AIPMT-2003**
In five kingdom system, the main basis of classification is– **Mode of nutrition**	**AIPMT-2002**
Species can be identified on the basis of– **Reproductive isolation**	**JIPMER-2008**
The taxon which includes related species is– **Genus**	**AIIMS-2010**
Static concept of species was put forward by– **Carolus Linnaeus**	**AIPMT-1988**
A species defined as "the group of actually or potentially inter-breeding natural population producing fertile offspring and reproductive isolated from other groups" The above statement is given by– **Mayr**	**CG PMT-2005**
The highest in the hierarchy of taxonomic category– **Kingdom**	**BCECE-2015**
The taxonomic term may be suggested for any rank in the classification– **Taxon**	**Karnataka CET-2013**
The highest number of species in the world is represented by **Fungi**	**AMU-2014**
Humans belong to the family– **Hominidae**	**J&K CET-2010**
The biological definition of a species depends on– **Reproductive isolation of two groups of organisms**	**BCECE-2012**
The framework system of classification in which various taxonomic categories are arranged in order of logical sequence is called– **Hierarchy**	**J&K CET-2011**
The organization publishes the Red Data Book is– **IUCN**	**NEET (Karnataka)-2013**
The common characteristics between tomato and potato will be maximum at the level of their– **Family**	**NEET (Karnataka)-2013**
Practical purpose of taxonomy or classification– **Facilitate the identification of unknown species**	**AIPMT-1999**
The less general in characters as compared to genus– **Species**	**BHU PMT (Screening)-2010 AIPMT-2001**
The only taxonomic category that has a real existence– **Species**	**Karnataka CET-2006**
The concept of genus was proposed by– **Tournefort**	**AMU-2003**
The type specimen used by the author in the original publication is known as– **Holotype**	**BVP-2006**
Taxonomical Aids	
The taxonomic hierarchy contains organisms belonging to the same class but not to the same family is– **Order**	**AP EAPCET-11.05.2023, Shift-I**
The taxonomical aid used for identification of organisms based both similarities and differences is– **Key**	**AP EAMCET-25.09.2020 Shift-II Kerala PMT-2012**
The contrasting characteristics generally in a pair used for identification of animals in Taxonomic Key are referred to as– **Couplet**	**NEET (Odisha)-2019**
Taxonomic key is one of the taxonomic tools in the identification and classification of plants and animals. It is used in the preparation of– **Monographs and Flora**	**JIPMER-2017**
Scientific names of plants are based on principles criteria agreed by and are given in– **ICBN**	**J&K CET-2014**

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The Father of Taxonomy is regarded as– **Carolus Linnaeus**	**WB JEE-2012 Rajasthan PMT-1995**
Herbarium sheets are arranged according to the system of classification and should have information about– **Date and place of collection, English, local and botanical names, family, collectors name**	**J&K CET-2014**
Study of preservation of dead organism in liquid by chemical method is called– **Urobiology**	**JIPMER-1995**
The Imperial Forest Research Institute (IFRI) established in 1906 changed its name to– **FRI**	**CMC Ludhiana-2014**
The correct sequence of Man, taxonomically starting from super-family to sub-family is– **Hominoidea, Hominidae, Homininae**	**TS EAMCET-2015**
The taxonomic aids can give comprehensive account of complete compiled information of any genus or family at a particular time– **Monograph**	**Kerala PMT-2009**
The label of a herbarium sheet does not carry information on– **Height of the plant**	**NEET-2016 Phase-II**
The most important function of botanical gardens is that– **They allow ex situ conservation of germplasm**	**Uttarakhand PMT-2010 JIPMER-2007**
The pesticide that is used in the preparation of herbarium is– **Mercuric chloride**	**J&K CET-2010**
A major break through in the studies of cells came with the development of electron microscope. This is because– **The resolution power of the electron microscope is much higher than that of the light microscope**	**BCECE-2013**
A student wishes to study the cell structure under a light microscope having 10X eyepiece and 45X objective. He should illuminate the object by which one of the following colours of light so as to get the best possible resolution– **Blue**	**JIPMER-2007**
A collection of plants and seeds having diverse alleles of all the genes of a crop is called– **Germplasm**	**AIPMT (Screening)-2011**
Science, which deals with the study of ageing is knows as– **Gerontology**	**CG PMT-2009**
The study of relationship between size and shape is called– **Allometry**	**Uttarakhand PMT-2008**
The national institute encourages the publication of flora of different regions of India is– **Botanical survey of India (BSI)**	**AP EAMCET-2001**
The vital stain is a– **Methylene blue, Janus green and Neutral red**	**Haryana PMT-2011**
The electron microscope is invented by– **Knoll and Ruska**	**AIIMS-2010, DUMET-2002 Rajasthan PMT-2001**
The crystal of lead zirconate is a key component of– **Sonography**	**WB JEE-2007**
The kind of microscopy uses acridine orange– **Fluorescence**	**BCECE-2015**
It is generally used for creating density gradient during centrifugation– **CsCl**	**BCECE-2015**
The biggest herbarium of India is situated in– **Calcutta**	**Rajasthan PMT-1996, 1995**
Binomial Nomenclature	
Binomial system of nomenclature was given by– **Linnaeus**	**Karnataka CET-2022 Tripura JEE-2021, 2017 AP EAMCET-05.10.2021 Shift-I MHT CET 5.10.2020 Shift-I VMMC-2012 UP CPMT-2012, 2008 AFMC-2010, CMC Vellore-2010 J&K CET-2010, 2000 AMU-2009, 2003 Rajasthan PMT-2008, 2003, 1998 Punjab MET-2008, 1999 BHU-PMT (Screening)-2008, 2006 MGIMS Wardha-2008 CG PMT-2008, DUMET-2004 Manipal-2002, AIIMS-2000**
ICBN stands for– **International Code for Botanical Nomenclature**	**AMU-2014, AIPMT-2007 BVP-2004, DUMET-2003**
'X' and 'Y' are the components of Binomial nomenclature. This naming system was proposed by 'Z'–**X-Generic name, Y-Specific epithet, Z-Carolus Linnaeus**	**RE-NEET (UG)-06.06.2023 (Manipur)**
ICZN is– **International code of Zoological Nomenclature**	**AP EAMCET-03.09.2021 Shift-I**

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The third name in trinomial nomenclature is– **Sub species**	**AP EAPCET-07.09.2021 Shift-I**
In Binomial nomenclature, the name of the author– **It is written in an abbreviated form**	**AP EAMCET-25.09.2020 Shift-II**
The scientific name of Mango which was first described by Carolus Linnaeus– **Mangifera indica Linn.**	**NEET-2019**
Tautonym is– **Same name for genus and species**	**CMC Ludhiana-2012 Haryana PMT-2003**
The scientific or botanical name of Asafoetida (Hing) is– ***Ferula asafoetida***	**MGIMS Wardha-2013**
Universal rules of nomenclature is wrong regarding– **Biological names are generally in Greek and written in italics**	**MGIMS Wardha-2013**
The scientific name of Asian tiger mosquito– ***Aedes albopictus***	**WB JEE-2009**
Scientific name of sunflower is– ***Helianthus annuus***	**WB JEE-2009**
The zoological name of North Indian hare is– ***Lepus nigricollis***	**UP CPMT-2004**
A social foresting species is– ***Leucaena leucocephala***	**Punjab MET-1999**
Botanical name of Chili is– ***Capsicum annum***	**Rajasthan PMT-1996**
The botanical name of cauliflower is– ***Brassica oleracea var. botrytis***	**AMU -2000**
In zoological nomenclature the sub-species is represented by– **Trinomen**	**AP EAMCET-2001 AMU-1999, JIPMER-1997**
Scientific name of king cobra is– ***Ophiophagus hannah***	**J&K CET-2006**
Zoological name of common Indian krait is– ***Bungarus caeruleus***	**AMU-2009 Punjab MET-2008**
The generic epithet for the species epithet 'Santalinus' is– **Pterocarpus**	**AP EAMCET-1997**
Indian rose wood tree is a common name of– **Dalbergia sissoo**	**Uttarakhand PMT-2008**
One of the recently introduced new crop of oil seed in the deserts of India is Jojoba . The correct botanical name of this plant is– ***Simmondsia chinensis***	**AMU-1996**
Ragi is– ***Eleusine coracana***	**BCECE-2003**
Botanical name of 'chana' is– ***Cicer arietinum***	**JIPMER-2010**
Thalamiflorae, Calyciflorae and Disciflorae are series of– **Polypetalae**	**Uttarakhand PMT-2011**
The botanical name of soyabean is– ***Glycine max***	**Kerala PMT-2008**
Systema Naturae was written by– **Linnaeus**	**JIPMER-2008**
Botanical name of arhu (peach) is– ***Prunus persica***	**Uttarakhand PMT-2006**
The classification of organisms based on their evolutionary history and establishing their phylogeny on the totality of various parameters from all fields of studies– **Biosystematics**	**AIPMT-2003**
The correct scientific name of wheat derived by binominal nomenclature is– ***Triticum aestivum***	**AIIMS-2016**
The term "New Systematics" was introduced by– **Julian Huxley**	**AIPMT-1988**
When the specific epithet exactly repeats, generic name. It is called as–**Tautonym**	**Punjab MET-2007**
Who gave the nomenclature according to which humans are called Homo sapiens– **Linnaeus**	**BCECE-2015**
Binomial nomenclature means– **Two word names, the first indicates genus, and other species**	**AMU-2014**
Oryza sativa is the binomial name of the rice plant, the sativa stands for– **Specific epithet**	**WB JEE-2008**
Nomenclature is governed by certain universal rules. The contrary to the rules of nomenclature is– **Biological names can be written in any language**	**NEET-2016 Phase-I**
The scientific name of Kashmiri stag is– ***Cervus elaphus hanglu***	**AP EAMCET-2010**
The correct method of showing scientific name of coconut palm derived by binomial nomenclature is– ***Cocos nucifera***	**Karnataka CET-2012**
The scientific name of zebu is– **Bos indicus**	**Karnataka CET-2004**
Predictive generalisation or repeatable experimentation is not based on– **Hypothesis**	**UP CPMT-2011**
In biosystematics, the basis of classification is– **Evolutionary history considering various parameters from different fields of studies**	**MGIMS Wardha-2015**

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02.

BIOLOGICAL CLASSIFICATION

2.1 CLASSIFICATION

- The most common method of reproduction in bacteria– **Binary fission**
- The vast majority of bacteria are– **Heterotrophs**
- Archaebacteria differ from other bacteria in having different– **Cell wall structure**
- Aristotle divided animals into two groups on the basis of– **Presence and absence of red blood**
- Contagium vivum fluidum was proposed by– **M. W. Beijerinck**
- The five kingdom classification was proposed by– **R. H. Whittaker**
- Mycoplasmas are classified under kingdoms of– **Monera**
- In five-kingdom classification system, the kingdom that includes the blue-green algae, nitrogen-fixing bacteria and methanogenic archaebacteria is– **Monera**
- Two classification system was a kingdom system of classification proposed by - **Linnaeus**
- The characters served as the criteria for five kingdom system of classification as used by R.H. Whittaker– **Cell structure & thallus organisation, Mode of nutrition and reproduction, Phylogenetic relationships**
- In Whittaker's five kingdom system of classification, eukaryotes are distributed among– **Four kingdoms**
- According to Whittaker, basis of classification is/are– **Cell structure, Mode of reproduction, Phylogenetic relationship and nutrition**
- Extensive metabolic diversity shows– **Bacteria**
- Whittaker's classification is not mentioned– **Virus, Viroids, Lichens**
- Four kingdom system of classification was proposed by– **Copeland**
- Two Kingdom system of classification was developed by – **Linnaeus**
- Cell wall of fungi is made up of– **Chitin**
- Whittaker is famous for – **Five kingdom classification**
- Which characteristic placed the fungi in a separate kingdom– **Cell wall composition**
- Methanogens are present in the– **Gut of cow**
- Cyanobacteria are– **Photosynthetic prokaryotes**
- Bacteria reproduces by– **Fission, Asexual reproduction (spore formation), Sexual reproduction (DNA transfer)**
- Harsh habitat found in– **Archaebacteria**
- Bacteria found in hot springs are– **Thermoacidophiles**
- The pigment present in cyanobacteria– **Chlorophyll a**
- Colonies of Eubacteria are surrounded by– **Gelatinous sheath**
- Most abundant in nature bacteria are– **Heterotrophic bacteria**
- Rod shaped bacterium is called– **Bacillus**
- Majority of heterotrophic bacteria are– **Decomposers**
- Sole member of kingdom monera are– **Bacteria**
- Which bacteria oxidise various inorganic substances such as nitrates, nitrites and ammonia and use the released energy for their ATP production– **Chemosynthetic autotrophs**
- Which types of bacteria play a great role in recycling nutrients– **Chemosynthetic autotrophic bacteria**
- Bacteria whose cell has only a curve/comma is– **Vibrio**
- Cyanobacteria are called blue green algae because– **They have chlorophyll pigment**
- The conditions which would be favoured by thermoacidophiles are– **Hot and sulphur spring**
- Most abundant microorganisms are– **Bacteria**
- Which of the following are caused by bacteria– **Cholera, Typhoid, Tetanus**
- Which bacteria would function best in hot temperatures (45-60^{0}C)– **Thermoacidophiles**
- Specialized cells for fixing atmospheric nitrogen in Nostoc and Anabaena are– **Heterocyst**
- Currently bacteria are included in– **Monera**
- During unfavourable conditions, bacteria produce– **Spores**
- The organisms that completely lack a cell wall– **Mycoplasma**
- Archaebacteria can survive in extreme conditions because of the– **Rigid cell wall**

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- Characterised by the presence of a rigid cell wall are– **Eubacteria**
- The smallest organisms which cause diseases among plants are– **Mycoplasma**
- Heterocysts, specialised for nitrogen fixation, occur in certain– **Blue-green algae (Anabaena)**
- Temperature tolerance of archaebacteria is due to– **Cell wall structure**
- Name the organisms which do not derive energy directly or indirectly from sun– **Chemosynthetic bacteria**
- PPLO is– **Mycoplasma**

2.2 PROTISTA

- Protist used for the construction of sound proof rooms is– **Diatoms**
- Chlamydomonas and Chlorella are now included under– **Protista (Green algae)**
- Naked cytoplasm, mutinucleated and saprophytic are the characteristics of– **Slime moulds**
- All eukaryotic unicellular organisms belong to– **Protista**
- The multinucleate slimy mass of protoplasm ..... forms the body of slime moulds is called– **Plasmodium**
- Combinations of characters is true for slime moulds– **Saprophytic, Plasmodium without walls, spores dispersed by air currents**
- ..... is a flagellated protozoan that causes the disease..... **Trypanosoma gambiense, sleeping sickness**
- Causal organisms of malaria belong to the groups of protozoan protists is– **Sporozoans**
- Ciliated protozoan is– **Paramecium caudatum**
- Kingdom, has no well defined boundaries– **Protista**
- Organism have been placed under Kingdom Protista– **Chrysophytes & dinoflagellates, Euglenoids, Slime moulds & protozoans**
- Members of Kingdom Protista are primarily– **Aquatic**
- The Kingdom Protista forms a link with Kingdom– **Plantae, Fungi, Animalia**
- Chief producers in oceans are– **Diatoms**
- Red tides are caused by– **Dinoflagellates**
- Most of them have two flagella; one lies longitudinally and the other transversely in a furrow between the wall plates. Here we are talking about– **Gonyaulax group**
- Diatomaceous earth is the deposition of cell wall in their habitat by diatoms takes over– **Billions of years**
- The spores of slime mould are dispersed by– **Air currents**
- Protists include– **Chrysophytes, euglenoids and dinoflagellates**
- Which organism behaves like plants in the presence of light and absence of organic food, but in reverse conditions behaves like animals– **Euglena**
- Euglena belongs to which of the following kingdom– **Protista**
- The most notorious sporozoan, Plasmodium, is responsible for causing– **Malaria**
- The cell walls form two thin overlapping shells in which group of organisms such that they fit together– **Chrysophytes**
- Red tide is– **Colouration of water due to rapid multiplication of red dinoflagellates**
- Unlike other algae, diatoms do not readily decay due to– **Siliceous wall**
- Diatoms belong to– **Chrysophytes**
- In which of the following kingdoms some members have cell wall and some are without cell wall– **Protista**
- During unfavourable conditions, slime moulds– **From fruiting bodies bearing spores at their tips**
- Organisms were never included in protista– **Mosses**
- Cell wall of diatoms are composed with– **Silica**
- Decomposer protists are– **Slime moulds**
- A dinoflagellate which forms red tide– **Gonyaulax**
- In Dinoflagellates, the two flagella are– **One transverse and the other longitudinal**
- A protein rich layer which makes the body of euglenoids flexible is called– **Pellicle**
- During unfavourable conditions, the plasmodium differentiates to form fruiting bodies bearing spores at their tips. This group is– **Slime moulds**
- The photosynthetic protists are– **Euglenoids, Diatoms and Dinoflagellates**
- Protista contains– **Amoeba, Paramoecium and Dinoflagellates**
- The marine organisms responsible for killing fishes by producing toxins belong to the kingdom of Whittaker– **Protista**

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2.3 FUNGI

- Morels and Agaricus have edible fruiting bodies and belong to their respective class as– **Ascomycetes and Basidimycetes**
- Neurospora and Claviceps differ from Mucor and Albugo in– **Presence of cross walls in their hyphae**
- Alternaria and Colletotrichum commonly reproduced by– **Asexual Spores (Conidia)**
- An association between roots of higher plants and fungi is– **Mycorrhiza**
- The origin of asexual spore and sexual spores produced in members of ascomycetes respectively– **Exogenous, Endogenous**
- With respect to the fungal sexual cycle, the correct sequence of events– **Plasmogamy, karyogamy and meiosis**
- The fungi growing on dung are called– **Coprophilous**
- Absence of sexual reproduction– **Deuteromycetes(Imperfect fungi)**
- Important Fungus for making bread is – **Saccharomyces**
- Extensively used in biochemical and genetic work– **Neurospora (Ascomycetes)**
- Yeast belongs to– **Ascomycetes**
- Fungi is a parasite on mustard plant and causes the disease white rust of crucifers– **Albugo candida**
- Fusion of two motile gametes which are dissimilar in size is termed as– **Anisogamy**
- Fusion between morphologically alike gametes is referred to as– **Isogamy**
- Fusion of two gametes, ... are dissimilar in size is termed as– **Oogamy, Anisogamy**
- Respect to the fungal sexual cycle, the correct sequence of events is– **Plasmogamy, Karyogamy and meiosis**
- Eukaryotic achlorophyllous and heterotrophic organisms are grouped under kingdoms– **Fungi**
- Coenocytic mycelium is– **Multinucleate, aseptate**
- Main component of the cell wall of fungi is– **Chitin**
- Fungi shows asexual reproduction by all of the kinds of spores except– **Oospores**
- Sexual reproduction in fungi occurs by all of the except– **Zoospores**
- Dikaryophase is a specific characteristic of– **Ascomycetes and Basidiomycetes**
- Classes of Kingdom Fungi are characterised by the presence of coenocytic, multinucleate and aseptate mycelium– **Phycomycetes**
- Fungi lacking crosswalls in the mycelium belong to class– **Phycomycetes**
- The wonder drug, penicillin is extracted from Penicillium that belongs to– **Ascomycetes**
- In Penicillium, the asexual reproduction takes place by– **Conidiospores**
- A common character found in a ascomycetes member, deuteromycetes member and basidiomycetes member studied by you is– **Branched, septate mycelium**
- Coenocytic hyphae is found in– **Rhizopus, Mucor, Albugo**
- The members of litter decomposers are– **Deuteromycetes**
- Fungi differ from algae in being mostly– **Heterotrophic**
- Protists survive in– **Aquatic regions**
- An edible fungus is– **Morels**
- Truffles are the member of class– **Ascomycetes**
- Bracket fungi (Polyporus) belongs to the class– **Basidiomycetes**
- Fruiting body formation during sexual reproduction is observed in– **Ascomycetes and Basidiomycetes**
- Group of fungi lack sexual reproduction– **Deuteromycetes**
- Asexual spore in fungi is– **Conidia**
- Comprises of animal like protists– **Protozoans**

2.4 KINGDOM PLANTAE AND ANIMALIA

- The smallest living cells, known without a definite cell wall, pathogenic to plants as well as animals and can survive without oxygen– **Mycoplasma**
- Archaebacteria differ from eubacteria in– **Cell membrane structure**
- Ciliates differ from all other protozoans in– **Having two types of nuclei**
- ..... is not a plant like protist– **Slime mould**
- Members of Phycomycetes are found in– **Aquatic habitats, On decaying wood, Moist and damp places, As obligate parasites on plants**
- An association between roots of higher plants and fungi is called– **Mycorrhiza**
- When the two haploid cells do not fuse immediately, it formed - **A dikaryon**
- Organisms living in salty areas are called as– **Halophiles**

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- Insectivorous plants is– **Venus fly trap bladderwort**
- Kingdom Plantae includes– **Algae and bryophytes, Pteridophytes and gymnosperms, angiosperms**
- Character of plants only– **Cellulosic cell wall**
- The major difference between plant cell and an animal cell– **Cell wall**
- The phenomenon of alternation of generation is found in– **Kingdom Plantae**
- Life cycle of plants has two distinct phases namely– **Diploid sporophytic and haploid gametophytic phase**
- Insectivorous plants examples– **Bladderwort, Venus fly trap**
- Kingdom Animalia is characterized by– **Multicellular, eukaryotic and heterotrophic**
- Kingdom Animalia is– **Their mode of nutrition is holozoic**

2.5 VIRUS, VIROIDS AND LICHENS

- Prions are– **Proteinaceous infectious particle**
- It protects the nucleic acid from ribonuclease enzyme in tobacco mosaic virus (TMV) - **Capsomeres**
- Prions have only– **Protein coat and no nucleic acid**
- Extreme saline conditions found in– **Archaebacteria**
- The pair that consists of viral diseases is– **Mumps & small pox, Herpes & influenza**
- Viruses that infect bacterium are known as– **Bacteriophages**
- Virus could be crystallized and crystals consist largely of proteins. This was shown by– **W. M. Stanley**
- Viruses are – **Obligative parasite**
- Those viruses infect plants have which type of genetic material– **Single stranded RNA**
- Viruses that infect animals have which type of genetic material– **Either single/double stranded RNA or double stranded DNA**
- Genetic material of bacteriophage– **Double stranded DNA**
- Viroid was discovered by– **T. O. Diener**
- The fungal portion in Lichens is known as– **Mycobiont**
- Protein coat of virus is called– **capsid**
- In TMV, capsomeres are arranged in– **Helical manner**
- Crystallized and isolated viruses for the first time– **WM Stanley**
- Viruses are essentially made up of– **Proteins and nucleic acid**
- Lichens are indicators of pollution because– **They don't grow in polluted regions**
- Viroids differ from viruses in being– **Naked RNA molecules only**
- Neither prokaryotes nor eukaryotes among– **Virus**
- Viral genome is– **Either DNA or RNA**
- Acellular organisms called– **Viruses and viroids**
- Prepare food in lichens– **Phycobiont**
- Potato Spindle Tuber disease is caused due to– **Viroid**
- The most notable disease(s) caused by prions is/are– **Bovine spongiform encephalopathy, Mad cow disease in cattle, Cr–Jacob disease (CJD) in humans**
- There exists a close relationship between alga and fungus within a lichen. The fungus– **Provides protection, Anchorage and absorption for the algae**

2.6 MISCELLANEOUS

- Infectious agents which posses low molecular weight genetic material lacks– **Peplomers**
- Smallest living cells are– **Pathogenic both to plants and animals**
- Phylogenetic classification systems– **Are based on evolutionary relationship**
- ..... are important decomposers that cause decay and decomposition of dead bodies of plants and animals– **Saprophytic bacteria**
- The pair that consists of plant or animal bacterial diseases– **Citrus canker and tetanus**
- All eukaryotic unicellular organisms belong to – **Protista**
- The five kingdom classification was proposed by– **R. H. Whittaker**
- Organisms living in salty areas are called as– **Halophiles**
- Naked cytoplasm, multinucleated and saprophytic are the characteristics of– **Slime moulds**
- A dikaryon is formed when– **The two haploid cells do not fuse immediately**
- Members of phycomycetes are found in– **Aquatic habitats, On decaying wood, Moist and damp places, As obligate parasites on plants**

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EXAM POINT

Categorization of Organisms and Kingdom System	
The five-kingdom classification was suggested by– **Whittaker**	**UPCPMT-2011, 2010 J&K CET-2010 / AFMC-2009 AIPMT-2002 / BVP-2001 / AIIMS-1994**
In Whittaker's system of classification, prokaryotes belong to the kingdom of– **Monera**	**J &K CET-2009, 2008 JIPMER-2008 MGIM Wardha-2008 BHU PMT (Screening)-2007**
Bacteria that have specialized cell wall and plasma membrane structures to live and withstand the extreme environmental conditions– **Archaebacteria**	**AP EAPCET-22.05.2023, Shift-II**
Organism is multicellular– **Bacillus**	**TS EAMCET-31.07.2022 Shift-I**
The number of cohorts in calyciflorae and heteromerae of Bentham and Hooker classification respectively are– **5 and 3**	**TS EAMCET-30.07.2022 Shift-I**
Two animals belong to the same kingdom but different classes. They may belong to the same– **Phylum**	**AP EAPCET-07.09.2021 Shift-I**
Identification and arrangement of organisms on the basis of their cytological characteristics is called - **Biosystematics**	**AP EAPCET-07.09.2021 Shift-I**
Engler and Prantl published a phylogenetic system in the monograph– **Die Naturlichen Pflanzen Familien**	**AP EAMCET-2021, Shift-I CMC Vellore-2008**
If the student wants to study the development of zygote, internal structure and function of various pairs to assign the organism to a particular phylum, the student takes the help of following branches– **Development Biology, Anatomy, Physiology and Taxonomy**	**AP EAMCET-03.09.2021 Shift-I**
Multicellular heterotrophs are placed in how many kingdoms by R.H. Whittaker– **2**	**MHT CET-06.10.2020 Shift-I**
The study of different kinds of organisms, their diversities and relationship among them is studies in– **Systematics**	**TS EAMCET-29.09.2020 Shift-II**
The sexual system of classification is proposed by– **Carolus Van Linnaeus**	**AP EAMCET-24.09.2020 Shift-II UPCPMT-2012**
The third kingdom Protista is suggested by– **Haeckel**	**MHT CET-08.10.2020 Shift-I**
Mangifera indica, Solanum tuberosum (potato) and Panthera leo (lion) is regarding– **Mango belongs to Anacardiaceae, Potato belongs to Solanacea and Lion belongs to family Felidae**	**AP EAMCET-25.09.2020 Shift-I**
This pairs was excluded from Whittaker's five kingdom classification– **Viruses and lichens**	**KVPY SB and SX-2019**
Natural system of classification of plant kingdom was proposed by– **Bentham and Hooker**	**Tripura JEE-2018 VMMC-2013**
New Systematics introduced by Sir Julian Huxley is also called as– **Biosystematics**	**Kerala PMT-2008**
It is not a eukaryotic organism– **Anabaena**	**Assam CEE-2014**
'Genera Plantarum' was written by– **Linnaeus**	**AIIMS-1994**
The Phylogenetic System of classification was put forth by– **Adolf Engler and Karl Prantl**	**VMMC-2013 Kerala PMT-2009**
Five kingdom system of classification suggested by R.H. Whittaker is not based on– **Presence or absence of a well defined nucleus**	**AIPMT-2014**
The ascending order to Linnaean hierarchy is– **Species - genus - family - order - class - phylum - kingdom**	**Karnataka CET-2011**
An important criterion for modern day classification is– **Anatomical and physiological traits**	**AIPMT-1991**
Systema Naturae was written by– **Linnaeus**	**JIPMER-2008 DUMET-2008**
Phylogenetic system of classification includes– **Evolutionary trends**	**AIIMS-1995, 2014**
In five kingdom system of classification of RH Whittaker, how many kingdoms contain eukaryotes– **Four kingdoms**	**Punjab MET-2008**
It is not true about prokaryotes– **DNA is complexed with histones**	**DUMET-2006**
Engulfing of food either in solid or liquid is called– **Holozoic nutrition**	**J&K CET-2005**

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The book Genera Plantarum was written by– **Bentham and Hooker**	BVP-2008
A virus differs from a bacterium as it contains– **DNA or RNA as genetic material with no ribosomes**	J&K CET-2011
The Kingdoms-Monera, Protista, Fungi, Plantae and Animalia are distinguished on the basis of– **Type of nutrition, Type of cell and Type of reproduction**	Haryana PMT-2000
As per Whittaker's classification, an organism possessing eukaryotic cell structure, multicellular organisation, with a cell wall and nuclear membrane showing heterotrophic nutrition can be placed under the kingdom– **Fungi**	Kerala PMT-2014
In the five kingdom system of classification, which single kingdom out of the following can include blue-green algae, nitrogen-fixing bacteria and methanogenic archaebacteria– **Monera**	Punjab MET-2010
Phylogenetic system of classification is based on– **Evolutionary relationships**	AIPMT-2009
Number of criteria used in classifying organisms in five kingdom classification is– **5**	AP EAMCET-2011
Phylogenetic relationship cannot determine by– **Morphology**	AP EAMCET-2011
In classification of Carolus Linnaeus, which was not included– **Family and phylum**	UP CPMT-2014
Prokaryotic genetic system has– **DNA and no Histone**	UPCPMT-2002
Plant cell is differ from animal cell because of– **The presence of cell wall and chlorophyll in plant cell**	MGIMS Wardha-2003
Phylogenetic classification is one which is based on– **Common evolutionary descent**	J&K CET-2014 AFMC-2000
Evolutionary history of an organisms is known as– **Phylogeny**	Manipal-2012
Which one is a prokaryote– **Streptococcus**	Manipal-2011
The method of classification, called cladistics, is based on– **Evolutionary**	Manipal-2004
The basic unit of classification of plants and animals is– **Species**	Uttarakhand-2005 BHU PMT-2001
Two kingdoms constantly figured in all biological classifications are– **Plantae and Animalia**	J&K CET-2008
Phylogenetic system of classification was supported by– **John Hutchinson**	Manipal-2000 , JIPMER-1998
Classification of organisms based on evolutionary as well as genetic relationships is called– **Cladistics**	DUMET-2010
Scala naturae was written by– **Aristotle**	DUMET-2008
On the basis of body organization, animals are grouped as– **Protozoa and Metazoa**	CG PMT-2007
Binomial nomenclature indicates– **Genus and species**	Uttarakhand-2005
Hutchinson system of classification is– **Phylogenetic**	Uttarakhand-2005
The division of the plant kingdom into prokaryotic and eukaryotic is based on the character is of– **Nucleus, chromosomes and cell organelles**	Haryana PMT-1999
In five-kingdom classification, Euglena is placed in– **Protista**	Rajasthan PMT-2011
In five kingdom classification of Whittaker, eukaryotes were assigned to– **4 of 5 kingdoms**	HP CET-2012 AMU-2009 Uttarakhand PMT-2004
In the classification of Whittaker the kingdom Monera include– **Bacteria and cyanobacteria**	Rajasthan PMT-2000
The kingdoms-Monera, Protista, Fungi, Plantae and Animalia are distinguished on the basis of– **Type of nutrition, Type of cell and Type of reproduction**	VMMC-2002

Monera

Extra circular, double stranded, self-replicating DNA present in a bacteria is known as– **Plasmid**	AP EAPCET-11.07.2022 Shift-I Rajasthan PMT-2007, 2003 BVP-2005 JCECE-2004 AIIMS-1998
Plasmids are found in– **Bacteria**	MHT CET-2010 Rajasthan PMT-2009, 2005, 1996 Punjab MET-2009 CMC Vellore-2009 UP CPMT-2009, 2002 Manipal-2002 Karnataka CET-2001

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_____is a bacterium commonly found in the animal and human intestines– **Escherichia coli**	AP EAMCET-11.07.2022 Shift-II Punjab MET-2011 DUMET-2011
Wriggling movements of sporozoites are caused by– **Microtubules**	AP EAPCET-23.05.2023, Shift-II
Amphitrichous bacteria contains which type of flagella –**Single flagella at each en**	AP EAPCET-23.05.2023, Shift-II
DNA of ϕ × 174 bacteriophage has– **5386 Nucleotides**	TS EAMCET-11.05.2023, Shift-II
The early bacteria synthesized chlorophyll from– **Magnesium porphyrin**	AP EAPCET-23.05.2023, Shift-I
The structures of the parent that disappear during binary fission of Euglena and develop a fresh in daughter euglenae– **Stigma paraflagellar body and contractile vacuole**	AP EAPCET-23.05.2023, Shift-I
Two enzymes responsible for restricting the growth of bacteriophage were isolated from– **Escherichia coli**	AP EAMCET-12.07.2022 Shift-II
Fragment of DNA inserted in bacteria for forming copies is known as - **Plasmid**	AP EAMCET-12.07.2022 Shift-II Punjab MET-2009
Antibiotics are produced by– **Bacteria**	AP EAPCET-12.07.2022 Shift-I
Archaebacteria differ from eubacteria in– **Cell membrane**	AP EAMCET -03.09.2021, Shift-I AIPMT-2014
The use of friendly bacteria for therapeutic use is a concept of– **Probiotics**	AP EAMCET-03.09.2021 Shift-II
Smallest bacterial genome is seen in– **Mycobacterium genitalium**	MHT CET 5.10.2020 Shift-I
The sites of nitrogen fixation in blue green algae are– **Heterocysts**	MHT CET 5.10.2020 Shift-I
Escherichia coli is extensively used in biological research because it is– **Easily cultured**	AP EAMCET-24.09.2020 Shift-II AIPMT-1993
The structure present in cyanobacteria (BGA) helping is N_2 fixation is– **Heterocyst**	Punjab MET-2008 TS EAMCET-29.09.2020 Shift-II
Inclusion bodies of blue-green, purple and green photosynthetic bacteria are– **Gas vacuoles**	NEET-2020 Phase-II
The main difference in Gram (+)ve and Gram (–)ve bacteria resides in their– **Cell wall**	WB JEE-2011 AP EAMCET-24.09.2020 Shift-II AIPMT-1990
Microbes like Spirulina can be good alternate to the conventional sources of proteins for human nutrition, because– **They give more biomass in less time**	Karnataka CET-2019
It is true about culture media for microbes– **Lowenstein-Jensen medium is used to isolate mycobacteria**	SRM JEEE-2019
Single chromosome with circular DNA as genetic material occurs in– **E. coli**	MHT CET-2019
Bacterial flagella is made up of– **Flagellin**	SRM JEEE-2018
It is the non-pathogenic bacteria of colon– **Escherichia coli**	HP CET-2018
Bacterium the REN-Sal-I is isolated by– **Streptomyces albus**	Karnataka CET-2017
Restriction endonucleases are isolated from some bacteria. Their role in bacteria is– **Defence against virus**	Karnataka CET-2017
Treponema pallidum is a ____bacterium. **Spirochaete**	MHT CET-2017
The components which provides sticky character to the bacterial cell–**Glycocalyx**	NEET-2017
Which group contain DNA and RNA, demonstrate a long circular strand of DNA, not formed enclosed in a nuclear membrane and are bacteria- **Monerans**	JIPMER-2017
Teichoic acids are typically found in– **Cell walls of gram positive bacteria**	SRM JEEE -2017 UPCPMT-2011, 2009 J & K CET-2008
Microbes that inhibit the growth of other microorganisms termed as–**Antagonism**	SRM JEEE -2017
Most widely used bioweapon is– **Bacillus anthracis**	BCECE-2010
In bacteria, plasmid is– **Extra chromosomal material**	AIPMT-2002
The semilog of per minute growing bacteria is ploted against time. The shape of graph will– **Ascending straight line**	AIPMT-2002
'Comma' shaped bacteria are known as– **Vibrio**	AFMC-2001
The type of nutrition in purple and green sulphur bacteria is– **Photoautotrophic**	TS EAMCET-2015
Bacterium responsible for retting of jute and flex is– **Clostridium**	UP CPMT-2013
Bacteria with flagella all over its body, is called– **Peritrichous**	AIIMS-1994
Single filament of Nostoc without mucilage sheath is called as– **Trichome**	BHU PMT (Mains)-2010
Autotrophic organism with phycocyanin is called – **Cyanobacteria**	BVP-2004

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A mutant which has lost its ability to synthesize one or more essential compounds is called a/an– **Auxotroph**	BVP-2005
Heterothallism was discovered in– **Mucor**	BVP-2002
Bacterial toxins when excreted into the surrounding medium are known as– **Exotoxins**	Uttarakhand PMT-2006
Sexual reproduction is absent in– **Nostoc**	BVP-2001
Beggiatoa is a– **Chemoautotroph**	AP EAMCET-2014
The structure present in cyanobacteria (BGA) helping in nitrogen-fixation is– **Heterocyst**	JCECE-2010
Plasmid found in bacteria and used as vectors in molecular biology/ biotechnology work. These genetic element of bacteria are– **Extra-chromosomal**	AMU-1995
When there is bunch of flagella on one side, the bacteria are known as– **Lophotrichous**	AMU-1995
Methanogens belong to– **Archaebacteria**	NEET-2016 Phase-II
The structures that help some bacteria to attach to rocks and/or host tissues are– **Fimbriae**	AIPMT (Re-Exam)-2015
Structures which perform the function of mitochondria in bacteria– **Mesosomes**	AIPMT-2014
Pigment-containing membranous extensions in some cyanobacteria are– **Chromatophores**	NEET-2013
Besides paddy fields, cyanobacteria are also found inside vegetative part of– **Cycas**	NEET-2013
Barophilic prokaryotes– **Grow and multiply in very deep marine sediments**	AIPMT-2005
In Angiosperm all the four microspores of tetrad are covered by a layer which is formed by– **Callose**	AIPMT-2002
Transduction in bacteria is mediated by– **Phage vectors**	AIPMT-1994
Genophore/bacterial genome or nucleoid is made of– **A single double stranded DNA**	AIPMT-1993
Bacteria lack alternation of generation because there is– **Neither syngamy nor reduction division**	AIPMT-1992, 1991
Organisms, which fix atmospheric nitrogen in the soil, fall under the category of– **Bacteria**	AIPMT-1994
A large number of organic compounds can be decomposed by– **Chemolithotrophs**	AIPMT-1995
The sex organs provided in some bacteria are– **Sex pili**	AIPMT-1996
Azotobacter and *Bacillus polymyxa* are the examples of– **Non-symbiotic N_2 fixer**	AIPMT-1996
The hereditary material present in the bacterium E.coli is– **Double-stranded DNA**	AIPMT-1997
In bacteria respiration occurs in– **Cytoplasmic membrane**	JIPMER-2005
Water bloom is generally caused by– **Blue green algae**	JIPMER-2008 BHU PMT (Screening)-2007 BVP-2004
Genes are packaged into a bacterial chromosome by– **Basic protein**	AIPMT-1997
Photosynthetic bacteria have– **Pigment systems I and II**	AIIMS-2011
Some Gram-ve bacteria have peptidoglycan and an extra layer of– **Lipo-polysaccharide**	AIIMS-2001
The site of respiration in bacteria is– **Mesosome**	AIPMT-1997
Bacteria with single flagella at one end is called– **Monotrichous**	Punjab MET-2006
Maximum number of antibiotics are obtained from– **Bacteria**	AFMC-2003
Substances secreted by bacteria are– **Toxins**	AFMC-2003
Splenic fever occurs in cattles, goats, camel and sheep etc, and is caused by– **Bacillus anthracis**	BCECE-2015
Incubation period of Treponema pallidum is about– **3 to 4 weeks**	MHT CET-2016
Extra chromosomal circular DNA is found in– **Bacteria**	MHT CET-2008
The structure formed by bacterial genome is called– **Nucleoid**	Rajasthan PMT-1997 JIPMER-1996
A plasmid is made up of– **DNA**	JIPMER-2002
An organisms having cytoplasm, DNA and RNA but no cell wall is– **Mycoplasma**	CG PMT-2005

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How many basal body rings are present in gram positive cells– **2**	BCECE-2015
Archaebacteria is also called– **Halophiles**	WB JEE-2007
Actinomycetes is not a– **Bacteria**	MGIMS Wardha-2015
Organisms found in extreme temperature are– **Archaebacteria**	DUMET-2002
In ruminants cellulose digestion takes place by– **Bacteria and protozoans**	DUMET-2002
Bacteria do not have– **Mitochondria**	BVP-2008, DUMET-2005
Spirochaetes is– **Bacteria**	DUMET-2011
How many linear DNA fragments will be produced when a circular plasmid is digested with a restriction enzyme having 3 sites– **4**	KVPY SB & SX-2014
A bacterial colony is produced from– **A single bacterium by its repetitive division**	KVPY SB & SX-2014
Monera possess– **Nucleoproteins in direct contact with the rest of the cell substance**	MP PMT-2013
In purple and green bacteria, oxygen is not evolved during photosynthesis because hydrogen donor is– **H_2S**	AMU-2014
The plasma membrane of mycoplasma is rich in– **Cholesterol**	Punjab MET-2011
The characteristic of blue-green algae is– **DNA without histone, nuclear membrane absent and 70s ribosomes**	Rajasthan PMT-2002 JCECE-2003
Gram negative bacteria are resistant due to presence of– **Lipopolysaccharides**	UP CPMT-2012
The organism which completely lack a cell wall and can live without oxygen are– **Mycoplasmas**	Karnataka CET-2015
Linkage group in E. coli is– **1**	DUMET-2007
The structure of E. colichromosomal DNA is– **Double – stranded, right handed and circular**	WB JEE-2014
Lederberg and Tatum (1946) discovered– **Conjugation**	WB JEE-2014
The component of bacteria that retains the crystal violet stain during Gram staining is– **Peptidoglycan**	WB JEE-2014
Streptococcus pyogenes bacteria is observed as– **Chain - like formation**	WB JEE-2014
Chromosomes in a bacterial cell can be 1-3 in number and are– **Always circular**	BVP-2008
Bacteria are considered plant because they– **Have rigid cell wall**	JIPMER-2010 BHU PMT (Mains)-2008 BHU PMT (Screening)-2005
The bacterium (*Clostridium botulinum*) that causes botulism is– **An obligate anaerobe**	BCECE-2013 BHU PMT (Mains)-2010 AIPMT-2006
Mesosomes are distinctive prominent is not characteristic of– **Gram positive bacteria**	BCECE-2012
The bacterial genome contains **DNA without histone**	CG PMT-2004
The smallest free-living organism is– **Mycoplasma**	CG PMT-2004
The sexuality in bacteria was established by– **Lederberg and Tatum**	CG PMT-2004
Cell wall is extremely well preserved in fossil specimen in– **Diatoms**	BVP-2011
Some bacteria are not easily killed by antibiotics or heat treatment because of their– **Capsule**	CMC Vellore-2011
Pseudomonas is– **Denitrifying bacteria**	J&K CET-2011
Plague (black death) is caused by– **Bacteria**	Haryana PMT-2000
The Gram (-) bacteria detect and respond to the chemicals in their surroundings by– **Porin**	WB JEE-2008
Staphylococci cocci appears like graphs under– **Microscope**	WB JEE-2015
Smallest bacteria is– **Dialister**	VMMC-2007 Rajasthan PMT-2005 UPCPMT-2002
Photosynthetic bacteria have pigments in– **Chromatophore**	Punjab MET-2010
Single-stranded is not a feature of the– **Plasmids**	NEET-2016 Phase-I
Some hyperthermophilic organisms that grow in highly acidic (pH - 2) habitats belong to the two groups– **Eubacteria and archaea**	AIPMT (Screening)-2010
Membrane-bound organelles are absent in– **Streptococcus**	AIPMT (Screening)-2010
Circular free DNA is found in– **Bacteria**	JIPMER-2004

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Thermococcus, Methanococcus and Methanobacterium are groups of– **Archaebacteria that consists of protein homologous to eukaryotic core histones**	**CMC Vellore-2015 JIPMER-2015 AIIMS-2008**
The part of the bacterial chromosome sharing homology with genome fragment transferred from the recipients to cell during merozygote formation is known as– **Endogenate**	**JIPMER-2015**
Gas gangrene is caused by– **Clostridium perfringens**	**JIPMER-2015**
The most abundant prokaryotes helpful to humans in making curd from milk and in production of antibiotics are ones categorised as– **Heterotrophic bacteria**	**AIPMT (Screening)-2012**
The Cyanobacteria are also referred to as– **Blue green algae**	**AIPMT (Screening)-2012**
Cell membrane does not differ in– **E.coli and Chlamydomonas**	**AIPMT (Screening)-2012**
Maximum nutritional diversity is found in the group– **Monera**	**AIPMT (Screening)-2012**
Capsule advantageous to a bacterium because– **It allows bacterium to "hide" from host's immune system**	**NEET (Karnataka)-2013**
The term 'Glycocalyx' is used for–**A layer surrounding the cell wall of bacteria**	**NEET (Karnataka)-2013**
Modern farmer's can increase the yield of paddy upto 50% by the use of– **Cyanobacteria in Azolla pinnata**	**AIPMT-1998**
Transduction in bacteria carried out by– **Bacteriophage**	**AIPMT-1998**
Hot water spring thermophiles survives a temperature of– **104 ºC to 106ºC**	**AIPMT-1998**
Bacteria are essential in carbon cycle as– **Decomposer**	**AIPMT-1998**
According to five kingdom system, blue-green algae belongs to– **Monera**	**J&K CET-2011, AIPMT-1998**
Non–symbiotic nitrogen fixing bacteria– **Azotobacter**	**AIPMT-1998**
DNA of E. coli– **ds circular**	**AIPMT-1998**
Azolla is used in the cultivation of– **Rice**	**AIPMT-1999**
Anabaena is associated with Azolla– **Leaves**	**AIPMT-1999**
Plant pathogenic bacteria are mostly– **Gram – Non spore forming**	**AIPMT-1999**
In Lederberg's replica plating experiment what shall be used to obtain streptomycin resistant strain– **Complete medium and streptomycin**	**AIPMT-2001**
Oxygenic with nitrogenase is true for– **Cyano bacteria**	**AIPMT-2001**
Plant decomposers are– **Monera and fungi**	**AIPMT-2001**
Oldest living beings is true for– **Archaebacteria**	**AIPMT-2001**
Difference in gram positive and gram negative bacteria is due to– **Cell wall**	**AIPMT-2001**
An organism used as a Biofertilizer for raising soyabean crop is– **Rhizobium**	**AIPMT (Screening)-2011**
Marsh gas is mainly produced by the activity of anaerobic bacteria on– **Sewage**	**AIPMT (Screening)-2011**
Glomus helps in absorption of phosphorus from soil by– **Plants**	**AIPMT (Screening)-2011**
The function of leghaemoglobin in the root nodules of legumes is– **Oxygen removal**	**AIPMT (Screening)-2011**
Bacteria which oxidize ammonia to nitrates- **Nitrifying bacteria**	**AIPMT (Screening)-2011**
In eubacteria, a cellular component that resembles eukaryotic cell is– **Plasma membrane**	**AIPMT (Screening)-2011**
Organisms called Methanogens are most abundant in a– **Cattle yard**	**AIPMT (Screening)-2011**
PPLO are smallest cell in the living world. The extend form of PPLO is– **Pleuro Pneumonia Like Organism**	**JIPMER-2016 AMU-1999**
The wall of bacteria consists of– **N- acetyl glucosamine and N- acetyl muramic acid**	**UP CPMT-2005 DUMET-2005**
A bacterial cell wall is mainly composed of– **Peptidoglycan (murein)**	**UP CPMT-2014 VMMC-2003 / AIIMS-1999**
Mollicutes cell is most minute and smallest– **Free-living organism**	**UP CPMT-2014**
Circular free floating molecule of DNA duplex, autonomous, found in bacterial cytoplasm are extensively used as vector in genetic engineering– **Plasmids**	**UP CPMT-2014 BVP-2006**
Bacteria differ from plants in that they do not have– **A well define nucleus**	**UP CPMT-2011**
Identify a micro-organism that can produces biomass of protein– **Methylophilus methylotrophus**	**Karnataka CET-2016**
Chromosomes in bacterial cell can be 1 to 3 in– **are always circular**	**MGIMS Wardha-2010 Uttarakhand PMT-2007**
Lipopolysaccharide located on the surface of the bacteria is called - **Bacterial endotoxin**	**JIPMER-2013**

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Colourless, unicellular, cell wall bound, spherical or rod-shaped micro-organism and lacking organised nucleus is called– **Bacteria**	UP CPMT-2004
Tuberculosis is caused by– **Mycobacterium sp.**	WB JEE-2010
Bacteriophages kill– **Bacteria**	WB JEE-2010
Bacteria with single flagella at one end is called– **Monotrichous**	Rajasthan PMT-2004
Bacteria causing disease of citrus is– **Citrus canker**	Rajasthan PMT-2004
O_2 does not evolved in photosynthesis of– **Bacteria**	Rajasthan PMT-2004
When the procedure of bacterial staining is carried out, the Gram negative bacteria stains– **Red**	AFMC-2000
The cell wall material present only in bacteria and blue-green algae is– **Muramic acids**	AMU-2015
Nucleic acid is the hereditary material in– **Bacteria**	BCECE-2005
Mesosomes are found in– **Bacteria**	BHU PMT-2002
Type of genetic material present in bacteria is– **DNA**	Punjab MET-2003 BHU PMT-2002
In bacteria respiration occurs in– **Cytoplasmic membrane**	BHU PMT-2003
In bacterial cell enzymes for aerobic respiration are found in– **Mesosome**	Punjab MET-2003 Rajasthan PMT-1996
Blue-green algae are– **Prokaryotic**	UP CPMT-2010
Amphitrichous have flagella on both ends of the– **Bacterial cell**	UP CPMT-2010, 2001
Pigment present in cyanobacteria is– **c-phycocyanin**	BHU PMT (Screening)-2007 UP CPMT-2003
Bacteria do not have– **Mitochondria**	Uttarakhand PMT-2007 UP CPMT-2003
Photosynthetic bacteria does not evolve during– **Photosynthesis**	UP CPMT-2003
Cyanobacteria is an– **algae having blue-green pigment**	UP CPMT-2003
The peptidoglycans of bacteria consist of– **Sugars, D-amino acids and L-amino acids**	KVPY SB and SX-2015
Slime mould does not belong to– **Kingdom-Monera**	DUMET-2008
Rhizobium is– **Symbiotic bacteria**	JCECE-2005
The autonomously independent self replicating extra nuclear DNA imparting certain factors to some bacterium is called– **Plasmid**	J&K CET-2009
The term bacteria was coined by– **Ehrenberg**	J&K CET-2009
The genetic material of bacteria is present as– **Genophore**	JIPMER-2002, 1997
The site of photosynthesis in blue-green algae is– **Chromatophores**	BCECE-2014 Uttarakhand PMT-2009 BHU PMT (Screening)-2009
Heterotrophic belongs to the– **Kingdom Monera**	Kerala PMT-2015
Maximum number of bases in plasmid discovered so far is– **500 kilobase**	BHU PMT (Screening)-2010
The oldest living organisms on earth are known as– **Archaebacteria**	BHU PMT (Screening)-2010
The red color of red sea is due to– **Trichodesmium blue-green algae**	JIPMER-2003
Blue-green algae is found in– **Cycas**	JIPMER-2003
In prokaryotes, internal membrane systems that may become extensive and complex in photosynthetic bacteria is known as - **Chromatophores**	Rajasthan PMT-2010
Nuclear membrane is absent in– **Monera**	AMU-2010
The most successful group of organism on the surface of our globe is– **Gram negative photosynthetic cyanobacteria**	AMU -2000
The characteristic cells wall material peptidoglycan has another covering of lipopolysaccharides. This specialized condition is found in– **Eubacteria Gram negative**	AMU -2000
The rumen of cattle is the site of fermentation of cellulose fibres through the action of– **Archaebacteria**	AMU-1999
The nature of photosynthesis in blue-green algae is– **Oxygenic**	AMU-1998
Heterocysts are found in– **Nostoc**	HP CET-2013 VMMC-2002
A pigment in carotenoid is found in bacteria and fungi, it is– **Capsanthin**	VMMC-2006
The site of respiration in bacteria is– **Mesosomes**	VMMC-2006
The cells of the bacterium Streptococcus remain arranged in the form of– **Chain**	VMMC-2006

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Infolding of plasma membrane in gram (+ve) bacterial cell is called– **Mesosome**	**Rajasthan PMT-1998**
Witches broom disease is caused by– **Mycoplasma**	**JCECE-2005** **Manipal-2000** **Rajasthan PMT-1998**
The photoautotrophs, chemoautotrophs and heterotrophs incorporates by– **kingdom Monera**	**BCECE-2009** **CG PMT-2007** **AMU-1999**
Blue-green alga are included in– **Prokaryotes**	**Uttarakhand-2005**
Heterocysts are found in– **Cyanophyceae**	**Haryana PMT-2007** **J & K CET-2000**
The outer face of outer membrane of Gram-negative bacteria having– **Lipopolysaccharides**	**VMMC-2014**
Photosynthetic bacteria does not evolve– **Oxygen**	**JIPMER-2001**
Organism without any specific shape are– **Mycoplasm**	**Manipal-2013**
Botanical name of 'gram' is– **Cicer arietinum**	**BHU PMT (Mains)-2008**
The shape of the cocci bacteria is– **Spherical**	**AMU-2012**
Black rot of crucifers is caused by a– **Bacterium**	**AMU-2012**
Many bacteria are now resistant to penicillin because– **previously resistant forms survived and reproduced better than non-resistant forms**	**BHU PMT (Screening)-2011**
A bacterium is capable of withstanding extreme heat, dryness and toxic chemical. This indicates that it is probably able to form– **Endospores**	**Manipal-2009**
An example for symbiotic bacteria– **Rhizobium leguminosarum**	**DUMET-2009**
E. coli is found in– **Colon of human**	**VMMC-2010**
Leprosy is due to– **Mycobacterium**	**Haryana PMT-2003**
Cyanobacteria differs from other groups of bacteria in their– **Nutrition**	**CG PMT-2010**
Instead of chromosome which of the following has only DNA– **Anabaena and E. coli**	**CMC Vellore-2014**
70 S type of ribosomes are found in– **Nostoc cells**	**CMC Vellore-2014**
Bacterial chlorophyll absorbs mainly– **Infra red light**	**VMMC-2003**
Bacteria in cold climate can live for– **Many thousand year**	**AFMC-2001**
The disease caused by mycoplasma is– **Papaya bunchy top, Brinjal little leaf and Witches broom of potato**	**Rajasthan PMT-2000**
The inner most membrane of gram (-) negative bacteria is consist of–**Lipoprotein**	**Rajasthan PMT-2000**
Pseudomonas is detrimental to– **Soil fertility**	**KVPY SA-2015**
Product of photosynthesis in blue-green algae is– **Glycogen like**	**AMU-2002**
Aerobic bacteria found in hot sulphur springs are termed as– **Thermoacidophiles**	**AMU-2001**
The bacteria oxidising a number of inorganic compounds to obtain energy for the assimilation of CO_2 are called– **Chemoautotrophic bacteria**	**UP CPMT-2011** **AMU-2001**
Xanthomonas citri possesses– **Single polar flagellum**	**AP EAMCET-2002**
Protista	
Contractile vacuole in protozoan Amoeba is meant for– **Osmoregulation**	**UP CPMT-2012,2011,2008** **Rajasthan PMT-2011, 2008, 2007, 2004, 2000, 2002, 1998** **JCECE-2010 / Punjab MET-2008 / AIPMT-2002, 1991** **CG PMT-2008/ Karnataka CET-2005** **Manipal-2001/ AIIMS-1996**
Passive food ingestion in Amoeba is known as– **Import**	**BVP-2012, 2007** **CGPMT-2010, Manipal-2008** **Uttarakhand PMT-2008** **MGIMS Wardha-2006**
A bite of tse- tse fly may pass to humans– **Trypanosoma gambiense**	**AFMC-2003** **Rajasthan PMT-2003** **Karnataka CET-2000** **AIPMT-1991, 1989**
The infective stage of malarial parasite, Plasmodium that enters human body is– **Sporozoite**	**WBJEE-2011** **DU MET-2008, 2005, 2001** **Punjab MET-2003** **JIPMER-1996** **AIPMT-1990**

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Amoeba differs from Entamoeba in having– **Contractile vacuole**	**JIPMER-2010 AMU-2009, 2002 Punjab MET-2008 UPCPMT-2006**
Mild tertian malaria is caused by– **Plasmodium ovale**	**AP EAPCET-22.05.2023, Shift-II**
Free living microorganism that feed on organic detritus and an example– **Saprophytes, Bacillus**	**AP EAPCET-22.05.2023, Shift-I**
Protozoan in which cilia are confined only to juvenile stages are– **Acineta**	**AP EAPCET-23.05.2023, Shift-II**
The diploid stage in the life cycle of Plasmodium vivax is– **Ookinete**	**TS EAMCET-11.05.2023, Shift-I**
Undulipodia are– **Flagella and cilia of protozoans**	**AP EAPCET-11.07.2022 Shift-I**
In parasitic castration– **Gonads of the host degenerate**	**AP EAPCET-11.07.2022 Shift-I**
Multicellular animals that exhibit cellular level organisation are– **Parazoans**	**TS EAMCET-30.07.2022 Shift-II**
During binary fission of Euglena is divided by– **Nucleus, kinetosomes and chromatophores**	**AP EAPCET-12.07.2022 Shift-I**
Digenetic cytozoic parasite is– **Plasmodium**	**TS EAMCET-30.07.2022 Shift-II**
Organism "A" lives as a parasite in the body of an organism "B", "C" is another organism lives as a parasite in the body of "A" then C is– **Hyperparasite**	**TS EAMCET-31.07.2022 Shift-I**
Transformation of merozoites of Plasmodium into gametocytes takes place when the erythrocytes are in– **Bone marrow**	**TS EAMCET-31.07.2022 Shift-I**
Actinophrys has– **Heliopodia**	**TS EAMCET-09.08.2021 Shift-II**
In which body part of female Anopheles mosquito, gametes of parasite Plasmodium fertilise and develop– **Gut**	**GUJCET-2021**
Dimorphic nucleus is found in animal– **Paramecium caudatum**	**AP EAMCET-06.09.2021 Shift-I AIPMT-2002**
The daughter paramecia formed immediately after binary fission are– **Proter and opisthe**	**TS EAMCET-10.08.2021 Shift-I**
All protozoans are / have– **Eukaryotic organization**	**AP EAMCET-03.09.2021 Shift-I**
The interval between the first entry of Plasmodium into the blood of man in the form of sporozoites and its second entry in the form of cryptozoites is called– **Prepatent period**	**AP EAPCET-07.09.2021 Shift-I TS EAMCET-08.05.2019 Shift-II**
Euglena is– **Photosynthetic Protozoa**	**AP EAMCET-05.10.2021 Shift-I**
Multiple fission in Amoeba is called– **Sporulation**	**TS EAMCET-09.08.2021 Shift-I BCECE-2004**
The vigour and vitality lost due to repeated binary fissions in ciliates is restored by– **Conjugation**	**TS EAMCET-29.09.2020 Shift-I**
Pseudopodia is mainly seen in– **Amoeba**	**AP EAMCET-25.09.2020 Shift-II**
The typical angiosperm embryo sac– **8 nucleate, 7 celled**	**TS EAMCET-29.09.2020 Shift-II Karnataka CET-2013**
Mastigophora is also known as– **Flagellata**	**AP EAMCET-24.09.2020 Shift-II**
Protozoan are usually– **Unicellular**	**AP EAMCET-25.09.2020 Shift-I**
Euglenoids are characterized by– **Flagellated, Pellicle, Eyespot**	**AP EAMCET-25.09.2020 Shift-I**
The process of 'exflagellation' occurs in which one of the following stages of the life cycle of Plasmodium– **Gametogony**	**TS EAMCET-08.05.2019 Shift-I**
The sequence in the developmental stages of plasmodium– **Sporozoites → Merozoites → Trophozoites → Schizonts**	**MHT CET-2019**
The enzyme secreted by trophozoites of *Entamoeba hystolytica* to dissolve the mucosal lining of the intestine of man– **Histolysin**	**TS EAMCET-09.05.2019 Shift-I**
Infective stages of malarial parasite is found in– **Salivary glands of mosquito**	**AIIMS-27.05.2018 Shift-II**
Paramecium is an example of– **Ciliated Protozoa**	**Tripura JEE-2018**
Most unusual protist phyla is– **Dinoflagellates**	**HP CET-2018**
Ciliates differ from all other protozoans in– **having two types of nuclei**	**NEET-2018**
Amoeba is immortal because– **Parental body is distributed among the offsprings during binary fission**	**Karnataka CET-2017**
Auxospores are produced in– **Diatoms**	**VMMC-2015**
Life history of Plasmodium is– **Digenetic**	**Haryana PMT-1999**
Protists obtain their food as– **Photosynthesizers and chemosynthesizers**	**AIIMS-2011**
Protista differs from Monera in having– **Nuclear membrane**	**AIIMS-2010**
Intermediate host is absent in the infection of– **Entamoeba**	**AIIMS-2009**

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Sexual stage (gametocytes) of Plasmodium occurs in– **Human RBC**	AIIMS-2013
In Entamoeba histolytica, the presence of chromatid bodies is characteristic of– **Precystic stage**	AIIMS-2002
The part of life cycle of malarial parasite Plasmodium vivax, that is passed in female Anopheles is– **Sexual cycle**	AIPMT-1992
Malignant tertian malaria parasite, belongs to – **Plasmodium falciparum**	AIPMT-1991
Kala azar and Oriental Sore are spread by– **Sand fly**	AIPMT-1990
During unfavourable conditions Amoeba reproduces through– **Multiple fission**	Punjab MET-2006 Rajasthan PMT-2004
When more than one species of Plasmodium infect a person, it is called– **Quotidian malaria**	JCECE-2002
In which species of Paramecium, autogamy is found– **Paramecium aurelia**	JCECE-2002
Which response Amoeba shows towards current of water– **Rheotaxis**	JCECE-2002
NH_3 in Amoeba is excreted by– **Plasma membrane**	JCECE-2006
Entamoeba histolytica is– **Monogenetic parasite**	JCECE-2006
The cyst wall of Euglena is made up of– **Carbohydrates**	Uttarakhand PMT-2010
Schuffner's dots produced by Plasmodium are– **Antigens**	Uttarakhand PMT-2010
Plasmodium falciparum causes which type of malaria– **Pernicious**	Uttarakhand PMT-2010
Two mating types of a variety of Paramecium are– **Morphologically similar and physiologically different**	CMC Vellore-2012
They have indestructible wall layer deposited with sillica is a characteristic feature of– **Chrysophytes**	Kerala PMT-2011
Euglena is a– **Holophytic protozoa**	BCECE-2015
Mode of nutrition in Trypanosoma is– **Parasitic**	DUMET-2006
Chagas disease is caused by– **Trypanosoma cruzi**	DUMET-2006
Marine protozoans lack contractile vacuole because– **they are hypo-osmotic to their environment**	DUMET-2002
Amoeba is an– **Unicellular animal**	DUMET-2005 UPCPMT-2003
Sporogony of malarial parasite occur in– **Stomach wall of mosquito**	DUMET-2004, BVP-2014, 2000
Recombination results from conjugation in– **Paramecium**	KVPY SB & SX-2014
Name the protozoan parasite with a food vacuole– **Plasmodium**	AP EAMCET-1998
Unicellular algae, diatoms and protozoans are the members of– **Protista**	J&K CET-2013
Schizogony of Plasmodium is also called as– **Agamogony**	Punjab MET-2011
In life cycle of Plasmodium, ex-flagellation leads to– **formation of microgametes**	Rajasthan PMT-2002
What happens in anterior part of Amoeba at the time of formation of pseudopodia– **plasma gel convert into plasma sol**	Rajasthan PMT-2002
Where does exoerythrocytic cycle take place in life cycle of Plasmodium– **Human liver**	Rajasthan PMT-2002
Dimorphism is present in which– **Ciliata Protozoa**	Rajasthan PMT-1999
In Amoeba hyaline cap is formed on – **Pseudopodia**	Rajasthan PMT-1999 MGIMS Wardha-2012
Slipper animalcule is– **Paramecium**	Manipal-2005
Sporozoite infectious stage of Plasmodium parasite contains– **a nucleus**	BVP-2014
Oocysts in the stomach of female Anapheles discovered by– **Ronald Ross**	VMMC-2009
Kinety system is present in– **Ciliates**	AP EAMCET-2015 TS EAMCET-2015
Excretory substance of Amoeba is– **Ammonia**	Rajasthan PMT-1995
Entamoeba histolytica is present in– **Life cycle**	Rajasthan PMT-1995
Entamoeba coli doesn't spread disease in– **Human**	Rajasthan PMT-1995
Pseudopodia is characteristic of class– **Sarcodina**	Rajasthan PMT-1995
Mode of feeding in free living protozoan is– **Holozoic and saprozoic**	DUMET-2007
Pseudopodia are produced by– **Fibroblast cell**	WB JEE-2014
During which process in Paramecium out of the four micronuclei formed, three nuclei degenerate- **Conjugation**	BCECE-2012 Punjab MET-2004
Chromatoid bodies in Entamoeba histolytica are found in– **Cysts**	CMC Vellore-2011
Entamoeba histolytica is found in – **Intestine**	Haryana PMT-2000

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Kingdom which includes life cycle showing zygotic meiosis and life cycle showing gametic meiosis- **Protista**	**Punjab MET-2005**
Euglenoid species that have chlorophyll are– **Facultative autotrophs**	**Punjab MET-2005**
Phytoplankton creatures are direct or indirect food of all creature on the– **Oceans surface**	**Punjab MET-2005**
Pebrine disease of mulberry silkworm caused by– **Protozoa**	**WB JEE-2008**
Euglenoids of organisms have a protein rich layer called– **Pellicle**	**Kerala PMT-2014**
The main function of filiform apparatus present at the micropylar part of the ovule– **It guides the entry of pollen tube into a synergid and discharge the male gametes**	**Kerala PMT-2013**
Chrysophytes, Euglenoids, Dinoflagellates and slime moulds are included in the kingdom– **Protista**	**NEET-2016 Phase-I**
Single-celled eukaryotes are included in– **Protista**	**AIPMT (Screening)-2010**
Yeast belongs to class– **Ascomycetes**	**JIPMER-2004**
Certain stages of *Plasmodium vivax* may survive for a long period in the liver of man as dormant stages and on reactivation enter into the cycles– **Erythrocytic schizogony**	**AP EAMCET-2008**
Nosema bombycis which causes pebrine in silk worms is a– **Protozoan**	**Karnataka CET-2009**
When fresh water protozoan is placed in marine water– **The contractile vacuoles disappear**	**Karnataka CET-2010**
Slime-mould belongs to– **Kingdom Protista**	**JIPMER-2016**
Number of layers in amoeboid cyst are– **3**	**UP CPMT-2011**
Amoeba was discovered by– **August Johann Rosel von Rosenhoff**	**UP CPMT-2006**
Phagocytosis was observed first time by– **Elie Metchnikoff**	**Uttarakhand-2005 BVP-2000**
Kappa particles indicate– **Cytoplasmic inheritance**	**JIPMER-2006**
The parasite of endothelial system of man is– **Leishmania**	**AP EAMCET-2000**
The phenomenon of metaboly is exhibited by– **Euglena**	**UP CPMT-2013**
Obligate parasites lives on – **Living host**	**AIIMS-1999**
Schistosoma is a parasite found in– **Liver**	**BVP-2003**
Reproduction in Paramecium is controlled by– **Micronucleus**	**BVP-2001 Manipal-2002**
The type of syngamy seen in Trichonympha is– **Hologamy**	**AP EAMCET-2014**
Algae attached to stone is called– **Epilithic**	**JCECE-2010**
A pathogen which cannot be cultured in an artificial medium is– **Virus**	**KVPY (SA)-2013**
Cell wall is absent in– **Amoeba**	**AIIMS-2000**
The infective stage of Entamoeba histolytica is– **Trophozoite**	**UPCPMT-2009 AIIMS-1998**
Trypanosoma causes sleeping sickness in man, it finally invades– **Cerebro-spinal fluid**	**AIIMS-1998**
True nucleus is absent in– **Anabaena**	**AIPMT-2015**
Carriers of Entamoeba histolytica are– **Healthy human host**	**UP CPMT-2007**
Mycorrhiza is an example of– **Symbiotic relationship**	**AIPMT-2003**
The protists have– **Membrane-bound nucleoproteins lying embedded in the cytoplasm**	**AIPMT-1994 Karnataka CET-2001 Haryana PMT-2000**
Genetic information in Paramecium is contained in– **Micronucleus**	**AIPMT-1990**
Trypanosoma belongs to class– **Zooflagellata**	**AIPMT-1989**
Movements by pseudopodia of Amoeba are due to change in– **Viscosity**	**JIPMER-2008**
Slimy mass of multinucleate protoplasm, having pseudopodia-like structures for engulfing food, reproduction through fragmentation of zoospores are – **Myxomycetes**	**AIIMS-2006**
Proterospongia is a connecting link between– **Protozoans and poriferans**	**AIIMS-2011**
Nosema protozoans is threat to– **Apiculture and sericulture**	**AIIMS-2011**
Parapodia is not the locomotory organ of– **Protozoa**	**AFMC-2005**
An intracellular parasite is– **Plasmodium**	**BCECE-2011**

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Taenia is not a–	**Protist**	**BCECE-2011**
In 1902 Nobel prize was given to–	**Sir Ronald Ross for observing Plasmodium**	**Rajasthan PMT-1996**
Assistance provided during locomotion in Amoeba–	**Rough surface**	**Rajasthan PMT-1996**
Less temperature are optimum for activation of gametogenesis in Plasmodium in stomach/ alimentary canal of–	**Female Anopheles**	**Rajasthan PMT-1996**
Incubation period of *Plasmodium falciparum* is–	**12 days**	**Rajasthan PMT-1996**
Amoeba lack–	**Centrosome**	**Rajasthan PMT-1996**
Plant like nutrition is present in–	**Euglena**	**UP CPMT-2003**
The disease caused by Entamoeba gingivalis is spread through–	**Kissing**	**Manipal-2011**
Lime-knots of slime moulds are–	**Capillitia**	**AFMC -2011**
Sand fly spreads a particular type of disease by its–	**Proboscis**	**Manipal-2004**
Nucleus of Monocystis is–	**Spherical**	**Manipal-2004**
Plasmodium is an–	**Endoparasite**	**Manipal-2004**
Sexual mode of reproduction in Protozoa is–	**Anisogamy**	**Uttarakhand PMT-2004**
Octanucleated cyst stage is found in–	**Entamoeba histolytica**	**JIPMER-1997**
The protists have–	**Membrane bound nucleoproteins lying embedded is the cytoplasm**	**VMMC-2002**
Physarum is a–	**Slime mould**	**Rajasthan PMT-2010**
Animal cell in which centrosome is not present is of–	**Plasmodium**	**AMU-1998**
Thigmotaxis is not shown by–	**Ascaris**	**VMMC-2012**
Protozoan, Protista are differentiated on the basis of–	**Locomotory structures**	**CG PMT-2007**
The type of pseudopodia seen in Lecithium is–	**Filopodia**	**AP EAMCET-2003**
The intermediate host of the parasite that causes Tashkent ulcers is–	**Phlebotomus papatassi**	**AP EAMCET-2004**
Study of protozoans is called–	**Protozoology**	**Haryana PMT-2002**
The disease oriental sore is caused by–	**Protozoa**	**Haryana PMT-2004**
The structure in Amoeba functionally similar to human kidney is–	**Contractile vacuole**	**AMU-2006**
Protista includes–	**Dinoflagellates, Amoeba, Paramecium**	**J&K CET-2006**
Nucleus of Monocystis is–	**Spherical**	**AMU-2005**
The number of daughter Vorticella formed after the second series of post-conjugation fissions is–	**7**	**VMMC-2010**
Hyman has proposed the sol gel theory for–	**Amoeboid movement explanation**	**BVP-2013**
An example of terrestrial protozoan is–	**Didymium**	**AP EAMCET-1999**
Diatoms belong to class–	**Bacillariophyceae**	**BCECE-2008** **UP CPMT-2007**
Amoeba has been kept in protozoa because–	**Unicellular body**	**BCECE-2002**
The beautiful diatoms and desmids are placed under–	**Chrysophytes**	**AMU-2012**
Diatoms float in water because they have–	**Wing like structure in middle of the body**	**AMU-2001**
Diatoms do not decay easily because–	**they have siliceous walls**	**AIIMS-2011**
'Red tide' is caused by–	**Gonyaulax**	**AIIMS-2014** **VMMC-2014**
The reserved food of Albugo is–	**Glycogen**	**Haryana PMT-2010** **UP CPMT-2010** **AMU-2009 / AFMC-2007** **Rajasthan PMT-1996**
Lomasomes are found in–	**Fungal cell**	**AP EAMCET-2011** **BVP-2000 / Manipal-2002** **Haryana PMT-2001**
Late blight of potato is caused by–	**Phytophthora infestans**	**BCECE-2010** **Haryana PMT-2009** **MGIMS Wardha-2008** **AMU-1996**
Cell wall of fungi is made up of–	**Fungal cellulose and fungal chitin**	**UP CPMT-2009** **JIPMER-2011, 2018** **Rajasthan PMT-1997**
Puffballs belongs to the class–	**Basidiomycetes**	**TS EAMCET-11.05.2023, Shift-I**
Identify the asexual reproductive structure associated with Penicillium–	**Conidia**	**NEET-2022**

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Deuteromycetes is called as Imperfect fungi because– **Sexual reproduction is absent**	**AP EAPCET-11.07.2022 Shift-I**
Perithecium is characterized by– **Flask-shaped fruiting body with apical opening**	**AP EAMCET-12.07.2022 Shift-II**
Organisms which are eukaryotic, non-cellulosic cell wall, heterotrophic belongs to– **Mycota**	**AP EAMCET-03.09.2021 Shift-II**
Basidiomycetes do not form– **Asexual spores**	**TS EAMCET-09.08.2021 Shift-I**
The saprophytes like bacteria, actinomycetes and fungi are– **Micro-consumers in an ecosystem**	**MHT CET-07.10.2020 Shift-I**
Vernalization increases the resistance of plants for diseases caused by– **Fungi**	**MHT CET-06.10.2020 Shift-I**
Fungus without any mycelium is– **Saccharomyces**	**AP EAMCET-24.09.2020 Shift-I**
Yeast cell can progress through the cell cycle in about– **90 minutes**	**AP EAMCET-24.09.2020 Shift-I**
A student while extracting DNA from Aspergillus fungus requires _____ enzyme to break open the cell wall. **Chitinase**	**Karnataka CET-2019**
Morphologically and Physiologically similar and usually motile and flagellated gametes are known as– Isogamete, Cladophora	**GUJCET-2018**
VAM (Vesicular Arbuscular Mycorrhizae) is– **Endomycorrhiza**	**SRM JEEE-2018**
After karyogamy followed by meiosis, spores are produced exogenously in– **Agaricus**	**NEET-2018**
Macromolecule nitrogen containing polysaccharide is – **Chitin**	**JIPMER-2017**
Dikaryotisation (n+n) in Agaricus is brought about by– **Clamp connections and Somatogamay between two hyphae of different strains**	**AIIMS-2017**
Among plants, Pheromones are secreted by the cells of the– **Yeast for facilitating mating**	**Haryana PMT - 2005** **BHU PMT-2003**
Aspergillus secretes toxins during storage conditions of– **Crop plants**	**AIPMT-2002**
The zygospore in Rhizopus develops into– **Promycelium**	**J&K CET-2002**
Yeast is– **Unicellular fungus**	**BHU PMT (Mains)-2010** **AIIMS-2000** **Manipal-2002**
Aspergillus cause disease in– **Human beings**	**BVP-2005**
Slimy mass of protoplasm with many nuclei and an amoeba-like thalloid body is a characteristic feature of– **Myxomycetes**	**Kerala PMT-2009**
Fungi can be stained with– **Cotton blue**	**BVP-2000**
Penicillium belongs to– **Ascomycetes**	**BVP-2000**
Organism which can respire in absence of O_2 is– **Saccharomyces**	**BVP-2000**
When a fungus completes its life cycle on two hosts, it is called– **Heteroecious**	**AMU-1995** **CMC Vellore-2008**
The fruiting body of Aspergillus or Penicillium is– **Cleistotheciun**	**AIIMS-1998** **JCECE-2006**
The imperfect fungi which are decomposers of litter and help in mineral cycling belong to– **Deuteromycetes**	**AIPMT (Re-Exam)-2015**
Amanita muscaria fungi contains– **Hallucinogens**	**AIPMT-2014**
An eukaryote which causes disease comes under– **Fungi**	**UP CPMT-2007**
The black rust of wheat is a fungal disease caused by– **Puccinia graminis tritici**	**AIPMT-1995**
Absorptive heterotrophic nutrition is exhibited by– **Fungi**	**AIPMT-1990**
Chlamydospores from dikaryotic mycelium fungus is produced by– **Sphacelotheca sorghi**	**AP EAMCET-2008**
Yeast is not included in protozoans but in fungi because– **it shows saprotrophic mode of nutrition**	**AIIMS-2016**
Rhizopus shows– **Heterothallism**	**AIIMS-2014**
Branched, aseptate, coenocytic mycelium present in– **Albugo**	**Punjab MET-2006** **Rajasthan PMT-2002** **JCECE-2003**
Mushrooms is not comprised of– **Sac-fungi**	**JCECE-2002**
The scientific name of oyster mushroom, an edible fungus is– **Pleurotus ostreatus**	**JCECE-2002**
Yeast is different from *Penicillium* and *Rhizopus* in being– **Unicellular**	**JCECE-2002**
Dikaryon formation is characteristic feature of– **Basidiomycetes and Ascomycetes**	**BVP-2014** **MGIMS Wardha-2006**

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A fungal disease of the poultry is–	**Monilliasis**	**AP EAMCET-1998**
One of the major components of cell wall of most fungi is–	**Chitin**	**NEET-2016 Phase-I**
The parthenospores of Rhizopus are–	**Multinucleate**	**AP EAMCET-2007**
Stored food in fungi–	**Glycogen**	**AIPMT-2000**
Black rust of wheat is caused by–	**Puccinia**	**AIPMT-2000**
Monascus purpureus is a yeast used commercially in the production of–	**Blood cholesterol lowering statins**	**AIPMT (Screening)-2012**
Yeast is used in the production of–	**Bread and beer**	**AIPMT (Screening)-2012**
The highest number of species in the world is represented by–	**Fungi**	**AIPMT (Screening)-2012**
Saccharomyces cerevisiae is used in the formation of–	**Ethanol**	**MGIMS Wardha-2003 AIPMT-1998**
Aspergillus niger yields–	**Citric acid**	**AIPMT-1998**
Adhesive pad of fungi penetrate the host with the help of–	**Mechanical pressure and enzymes**	**AIPMT-2001**
The sequence of the stages in the life cycle of Rhizopus after the reduction division of zygospore–	**Promycelium → germ sporangium → germ spores → mycelium**	**AP EAMCET-2010**
Monerans and fungi groups of organisms are–	**Ecologically similar**	**AP EAMCET-2008**
Birds' nest fungi and Puffballs belongs to–	**Basidiomycetes**	**AIPMT-2007**
'Clamp connections' are observed in–	**Basidiomycetes**	**JIPMER-2009**
Edible part of mushroom is–	**Basidiocarp**	**JIPMER-2009**
Parasitic and saprophytic conditions are more familiar in–	**Fungi**	**UP CPMT-2005**
Powdery mildew of crops are caused by–	**Ascomycetes**	**MGIMS Wardha-2010**
LSD is obtained from–	**Fungus**	**AFMC-2000**
Fungal spores produced externally at the top of hyphae are–	**Conidia**	**AFMC-2005**
Morels and truffles groups of fungi are classified under–	**Ascomycetes**	**AMU-2015**
Multinucleated filament of Rhizopus is–	**Coenocytic**	**BCECE-2005**
A septum in Eumycota fungi, bearing a complex pore is called as–	**Dolipore septum**	**BHU PMT-2002**
Yeast shows formation of–	**Pseudo mycelium**	**BHU PMT-2002**
The basic unit of chitin is–	**N-acetyl glucosamine**	**Punjab MET-2003**
Bacillus and Clostridium genera endospores are formed for–	**Reproduction**	**Punjab MET-2003**
Aflatoxins are mainly produced by–	**Fungi**	**Rajasthan PMT-1996**
Flagella present in Zoospores of Albugo are–	**Two dissimilar, on lateral surface**	**Rajasthan PMT-1996**
Water is not necessary for fertilization in–	**Albugo**	**Rajasthan PMT-1996**
Fungi produces spores, but lacks–	**Vasculature**	**VMMC-2013**
Fermentation products of yeast are–	**Ethyl alcohol + CO_2**	**MGIMS Wardha-2007**
Sexual dimorphism is absent in–	**Deuteromycetes**	**Manipal-2012**
Gill of mushroom are meant for–	**Reproduction**	**Manipal-2011**
Mycobiont and phycobiont association is–	**Helotism**	**AFMC -2011**
The total number of ascospores in Penicillium are–	**8**	**VMMC - 2014 AFMC -2011**
Laboratory weed is–	**Aspergillus**	**BHU PMT (Mains)-2011**
Heterothallism is common in–	**Mucor**	**BHU PMT-2001**
Club fungi is included in–	**Basidiomycetes**	**BHU PMT-2001**
Trichoderma species are potentially useful as–	**Biopesticides**	**DUMET-2010**
Fungi differs from slime moulds by lacking of–	**Flagellated spores**	**DUMET-2008**
In Rhizopus, the fusion of two different thalli to form zygospore is called–	**Gametangial copulation**	**AFMC-2002**
Agaricus is an–	**Edible fungus**	**BHU PMT (Mains)-2008 JIPMER-2003, 2000, 1997**
Biochemical and genetic work used extensively by–	**Neurospora**	**Kerala PMT-2015**
Diplanetism is exhibited by–	**Saprolegnia**	**AMU-2011**
Heterotrophic fungi can live as–	**Saprophytes, symbionts and parasites**	**AMU-2010**
Beadle and Tatum to proposed one gene-one enzyme hypothesis organism was used in–	**Neurospora**	**MGIMS Wardha-2004 UP CPMT-2004**

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In the sporogonium of which plant, columella is present– **Rhizopus**	MGIMS Wardha-2004 UP CPMT-2004
The chemical produced by the host plant to protect themselves against fungal infection is– **Phytoalexin**	Manipal-2000
Basidiospores are produced by– **Agaricus**	Karnataka CET-2003
Branched conidiophores are present in– **Penicillium**	Uttarakhand-2005
In Rhizopus, dome shaped sterile portions are found on erect structures that arise from stolons. These structures are referred to as– **Sporangiophores**	AP EAMCET-2004
The fungus that is edible– **Morchella**	Haryana PMT-2009 CG PMT-2009 MGIMS Wardha-2009 Haryana PMT-2009
Early blight disease of potato is caused by– **Alternaria solani**	VMMC-2014
In Puccinia, infection from barberry leaf to wheat plant is caused by–**Aeciospores**	JIPMER-2001
A species of Neurospora which can grow on a simple minimal medium is known as– **Prototroph**	JIPMER-1995
Promycelium in Rhizopus develops from– **Zygospore**	AP EAMCET-2001
Common bread mould is– **Rhizopus**	CG PMT-2006
Zygophore, progametangium, gametangium, zygospore are the successive structures formed in course of– **Sexual reproduction of Rhizopus**	VMMC-2010
Fungi considered as plant because of presence of– **Cell wall**	VMMC-2010
When the mycelium of *Rhizopus oryzae* grows submerged in a nutritive medium such as sugar solution the young coenocytic hyphae develop septa and divide into short multinucleate segment known as– **Oidia**	CMC Vellore-2007
Yeast is a good source of– **Riboflavin (vitamin -B_2)**	CG PMT-2011
Vascular wilts are caused by– **Erwinia pathogen**	AP EAMCET-2000
Black coal like spots of Anthracnose in plants caused by– **Gloeosporium fungus**	AP EAMCET-2000
Powdery mildew of wheat is caused by a species of– **Erysiphe**	Rajasthan PMT-2011
Sulphuric acid is not produced by various species of– **Fungi**	HP CET-2013 VMMC-2003
Fungal flagellum originates from– **Kinetosomes**	Manipal-2010
Zygospore formation occurs in– **Mucor**	Manipal-2010
Bakanae disease is caused by– **Fungus**	BHU-PMT (Screening)-2008
Fruiting body of mushrooms is present in– **Fungi**	BCECE-2004
Mycology is related with– **Fungi**	BCECE-2004
This fungus is not edible– **Toadstool**	BCECE-2009
Plantae	
Yeast poison themselves to death, because– **Above 13% of alcohol is hazardous**	AP EAPCET-23.05.2023, Shift-II
A person suffering from Iodine deficiency may be recommended to take extracts of this plant preparation– **Laminaria**	AP EAPCET-23.05.2023, Shift-II
Hashish, Charas and Ganja are– **Cannabinoids**	TS EAMCET-11.05.2023, Shift-I
The plants in the order of Ephemeral, Succulent and Non-succulent type– **Tribulus, Aloe, Casuarina**	TS EAMCET-11.05.2023, Shift-I
The plant has lateral branches of one internodal length– **Eichhornia**	AP EAPCET-12.07.2022 Shift-I
Jatropa and Pongamia plants are called as– **Petro-plants**	TS EAMCET-31.07.2022 Shift-II
Plant in which floral buds store food material– **Agave**	AP EAPCET-12.07.2022 Shift-I
The Campylotropous ovule is characterized by– **Micropyle comes towards funiculus**	AP EAMCET-24.09.2020 Shift-I
Green plants are– **Autotrophs**	BVP-2000
Sex chromosomes for the first time was discovered in– **Sphaerocarpos plant**	DUMET-2006
Polygonum type of embryo sac is– **Monosporic octa (8) nucleate**	MP PMT-2013
Insectivorous plant is– **Drosera**	MGIMS Wardha-2012
The most harmful weed is– **Parthenium**	CMC Vellore-2011
The movement of hairs in Drosera is– **Thigmonastic**	UP CPMT-2011
Aerenchyma provides– **Buoyancy to hydrophytic plants**	Uttarakhand PMT-2004
Insectivorous plants grow in a soil– **Deficient in nitrogen**	HP CET-2011

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A branch of botany concerned with the classification, nomenclature and identification of plants is– **Systematic Botany**	JIPMER-2000
Utricaurens is called– **Stinging nettle**	AMU-2003
Study of animal behaviour is– **Ethology**	TS EAMCET-31.07.2022 Shift-II
In Caecilians, vertebrae are– **Amphicoelous**	AP EAPCET-12.07.2022 Shift-I
Earthworm is not a– **Deuterostome**	J&K CET-2011
The possible beneficial aspect of grazing animals is the– **Addition of their excreta into the soil**	HP CET-2011
Notes on viruses, Viroids, Prions and Lichens	
The most suitable indicators of SO_2 pollution in the environment is– **Lichens**	AIPMT (Re-Exam)-2015 UP CPMT-2007 AIPMT-1992 JIPMER-2005
LPP-1 is a– **Cyanophage**	AIIMS-2014 BVP-2001 AIIMS-1995 Manipal-2001
Human Papilloma Virus and Chronic Hepatitis B are causing– **Cancer**	TS EAMCET-11.05.2023, Shift-II
Bovine spongiform encephalitis disease is caused by– **Prions**	AP EAMCET-11.07.2022 Shift-II
The virus which causes Bird flu is– H_5N_1	TS EAMCET-30.07.2022 Shift-II
The phage that attacks a host cell but do not destroy it immediately– **Temperate phage**	AP EAMCET-12.07.2022 Shift-II
Mad cow disease in cattle and Cr Jacob disease in humans are due to infection by– **Prion**	NEET (Re-Exam)-04.09.2022
Prophage is viral genome– **Incorporated and integrated to host genome**	AP EAMCET-03.09.2021 Shift-II
Classification of Virus is done by– **ICTV**	AP EAMCET-25.09.2020 Shift-II
The algal partner of the lichen is called– **Phycobiont or photobiont**	MHT CET-07.10.2020 Shift-I
The capsid of tobacco mosaic virus (TMV) has capsomere numbering– **2130**	AP EAMCET-24.09.2020 Shift-I KCET-2000
Mad cow disease in cattle is caused by an organism which have– **Abnormally folded protein**	NEET (Odisha)-2019
HIV belongs to the genus– **Lentivirus**	AP EAMCET-25.04.2018 Shift-II
Viroids differ from viruses in having– **RNA molecules without protein coat**	NEET-2017
There exists a close association between the alga and the fungus within a lichen. The fungus– **Provides protection, anchorage and absorption for the alga**	AIPMT-2005
Tobacco mosaic virus (TMV) genes are– **Single stranded RNA**	AIPMT-1994 / BVP-2002
Viruses possess– **Either DNA or RNA**	AIPMT-1997
Most of the lichens consist of– **Green algae and ascomycetes**	AIPMT-1997
Litmus is obtained from– **Rocella montagnei and Lasallia pustulata**	JIPMER-2005 HARYANA PMT -2005
Retrovirus have genetic material– **RNA**	JIPMER-2008
The genetic material in tobacco mosaic virus is– **ss RNA**	AIIMS-2016
Cyphella structure helps in the– **Respiration of lichens**	AIIMS-2002
The antibiotics have no effect on viruses because– **Viruses show no metabolism of their own**	AIIMS-2015
Single stranded RNA not enclosed by protein coat is called – **Viroids**	AIIMS-2003 Punjab MET-2006
Infectious proteins are present in– **Prions**	AIPMT (Screening)-2010
HIV/ HIV does not follow the central dogma of– **Molecular biology**	AIPMT (Screening)-2010
Virus envelope is known as– **Capsid**	AIPMT (Screening)-2010
'Reindeer moss' is common name for– **Cladonia rangiferina**	JIPMER-2004
There exists a close association between the alga and the fungus within a lichen. The fungus– **provides protection, anchorage and absorption for the algae**	JIPMER-2007
A term helotism is used for the symbiosis of– **Algae and fungi**	AP EAMCET-2007
Nucleic acid in HIV– **ss RNA**	AIPMT-1998

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Lichens can be used as–	**Bio-indicator for water and air pollution**	**AIPMT-1999**
Cauliflower mosaic virus contains–	**ds DNA**	**AIPMT-2001**
The latest view for the origin of viruses is–	**These are modified plasmids, which are infact the fragments of the nucleic acids of the host**	**AP EAMCET-2011**
The agents which are known to cause CJD are–	**Protein particles**	**Karnataka CET-2009**
The total number of amino acids when the capsid of TMV contains 2130 capsomeres is–	**336540**	**AP EAMCET-2013**
Cyanophages discovered by–	**Shafferman and Morris**	**UP CPMT-2014**
The virus, that infects bacteria, are made up of–	**DNA and protein**	**WB JEE-2006**
Provirus is–	**Integrated viral genome**	**JCECE-2008**
A lichen responsible for forest fire is–	**Usnea**	**BVP-2010**
Virus is classified in–	**Akaryota class**	**Rajasthan PMT-1996**
The protein that reproduce within the living cells are termed as–	**Prions**	**MGIMS Wardha-2014**
Helical contractile sheath is found in–	**Bacteriophage**	**Manipal-2011**
The common phycobiont of lichens is–	**Trebouxia**	**BHU PMT (Mains)-2011**
The process which cannot takes place in the absence of virus is–	**Transduction**	**Karnataka CET-2002**
Polio is caused by a–	**Virus with a single-stranded RNA**	**DUMET-2010**
The number of linkage group(s) present in *Escherichia coli* is–	**One**	**DUMET-2010**
Rabies is caused by–	**Virus**	**DUMET-2008**
Small proteins produced by vertebrate cells naturally in response to viral infections and which inhibit multiplication of viruses are called–	**Interferons**	**AFMC-2007**
Viruses that infect bacteria multiply and cause their lysis, are called–	**Lytic**	**Rajasthan PMT-2010**
Animals virus contains mostly–	**DNA**	**AMU-2011**
The genetic material in influenza virus is–	**RNA**	**AMU-2011**
Gemini viruses are plant viruses with–	**Circular single stranded DNA**	**AMU-1998**
Bacteriophage is consist of–	**Nucleoproteins**	**Rajasthan PMT-1998**
The virus which causes ring spot diseases in cherry is transmitted through–	**Pollen grains**	**AP EAMCET-2001**
Fungus/lichens which grow on wood is–	**Lignicolous**	**AFMC-2004**
Basic structure of protein was given by–	**F. Sanger**	**AFMC-2004**
The smallest organisms, which cause disease among plant are–	**Mycoplasma**	**CG PMT-2006**
Virus multiplies in–	**Living tissue**	**BHU-PMT (Screening)-2008 Uttarakhand PMT-2008 BHU PMT-2004**
Smallest animal virus is–	**Polio virus**	**BHU PMT (Screening)-2011**
Potato spindle tuber disease is caused by–	**A viroid**	**DUMET-2009**
Viruses are–	**Intracellular obligate parasites**	**DUMET-2009**
The pair that shows the double stranded RNA–	**Wound tumour virus and reovirus**	**VMMC-2010**
Bio-indicators are used for–	**Oxygen demand, air pollution and mineral present**	**Haryana PMT-2008**
Interferons are synthesized in response to–	**Viruses**	**Haryana PMT-2003**
AIDS, Rabies pair of disease is–	**Viral**	**Haryana PMT-2003**
T series bacteriophage possess complex tail structure is–	**T_4**	**CG PMT-2010**
A virus that can reproduce without killing its host is called a–	**Temperate virus**	**CG PMT-2010**
Dulbecco is credited to show that Viruses are the cause of–	**Cancer**	**CMC Vellore-2014**
Virus cause swollen shoot disease in–	**Cocoa**	**AP EAMCET-1999**
Tobacco mosaic virus is a tubular filament of size–	**300 × 20 nm**	**VMMC-2007**
Reovirus has double-stranded–	**RNA**	**CMC Vellore-2010**
Viruses that infect bacteria, multiply and cause their lysis are–	**Lytic**	**CMC Ludhiana-2012**
Plant viruses contain–	**RNA**	**AMU-2003**

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03.

PLANT KINGDOM

3.1 CLASSIFICATION

- Laminarin is the stored food in– **Dictyota**
- _____ of classification involves usage of one or few morphological characters for grouping of organisms– **Artificial system**
- Classification of organisms on the basis of fossils record that play important role in elucidation of evolutionary relationship is– **Phylogenetic system**
- The earliest system of classification used– **Only superficial morphological characters**
- Classification system, given by George Bentham and Joseph Dalton Hooker is– **Natural Classification System**
- Taxonomy is based on chromosome number, structure, behaviour is known as– **Cytotaxonomy**
- Artificial systems of classification were based upon– **Vegetative characters, Androecium structure, Habit and habitat**
- A system of classification in which a large number of traits are considered is– **Natural system**
- Each character is given equal importance and at the same time hundreds of characters can be considered in– **Numerical taxonomy**
- ..... uses the chemical constituents of plants to resolves confusions– **Chemotaxonomy**
- Cytotaxonomy is based on– **Structure and behaviour of chromosomes**

3.2 ALGAE

- Reproduction is synonymous with growth– **Chlorella and Amoeba**
- Life cycle is represented by fucus– **Diplontic**
- The formation of gametes in gametophyte of bryophyte, pteridophyte and gymnosperm occurs by– **Mitosis in all**
- Gracilaria and Gelidium reproduce sexually by– **Rhodophyceae (non-flagellate gametes)**
- Organisms, having chlorophyll a, c and fucoxanthin in their double membranous organelles– **Also have mannitol and laminarin starch as their reserve food**
- An alga as the source of protein is– **Chlorella**
- Brown algae is characterized by the presence of– **Fucoxanthin**
- Algae with floridean starch as reserve material is also characterized by – **Rhodophyceae (nonflagellate nature)**
- Algae, bryophytes and pteridophytes resemble with each other in– **Dependence on water for fertilisation**
- Haplontic life is is represented by– **Volvox**
- An alga exhibits diplontic life cycle is– **Fucus**
- Antherozoids represents– **Motile male gametes**
- In gracilaria, sexual reproduction is– **Oogamous**
- Ectocarpus is– **Filamentous brown algae**
- In algae, the photosynthetic pigments are present in– **Chloroplast**
- Peat is obtained from– **Sphagnum**
- Kelps are massive– **Brown algae**
- A colonial algae is– **Volvox**
- Algae has similar sized non flagellated gametes– **Spirogyra**
- Diatoms pile up at the bottom of water reservoirs and form big heaps as– **Their walls are embedded with silica**
- Members of chrysophytes– **Are found only in fresh water**
- Cell wall of diatoms– **Silica deposition**
- Most of _____ have two flagella, one lies longitudinally and the other transversely, in a furrow between the wall plates– **Dinoflagellates**
- Dinoflagellates are mostly– **Marine and photosynthetic**
- Diatoms do not decay as readily as most other algae because– **They have siliceous cell walls**
- Responsible for death of large numbers of marine animals such as fishes– **Red dinoflagellates (Gonyaulax)**
- Groups of organisms are included under chrysophytes– **Diatoms and desmids (golden algae)**
- The cell wall is composed of two thin overlapping shells, fit together like a soap case, in– **Diatoms**
- Red tides in warm coastal water develop due to the abundance of– **Dinoflagellates**
- Cyanobacteria also referred to– **Blue-green algae**
- Cyanobacteria are– **Photoautotrophs**
- Nuclear membrane is absent in– **Nostoc (prokaryotes)**
- Algae have cells made up of– **Cellulose, galatians and mannans**
- An example of colonial alga is– **Volvox**
- ..... plants is monoecious– **Chara**
- Life cycles of Ectocarpus and Fucus respectively, are– **Haplodiplontic, diplontic**
- Algae contains mannitol as reserve food material– **Ectocarpus**
- ..... is wrong about Chara– **Upper antheridium and lower oogonium**
- Isogamous condition with non-flagellated gametes is found in– **Spirogyra**
- Holdfast, stipe and frond constitute the plant body in case of– **Phaeophyceae**
- Cyanobacteria are classified under– **Monera**
- Laminarin and mannitol, the reserve food of brown algae, are– **Complex carbohydrates**
- Dictyota belongs to– **Phaeophyceae**
- Photosynthetic pigments of Rhodophyceae (red algae)– **chl a, chl d and phycoerythrin**

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- Phycoerythrin is present in– **Polysiphonia**
- Phycoerythrin, chlorophyll a chlorophyll d are characteristics of– **Rhodophyceae**
- Common example of red algae is– **Porphyra, Polysiphonia**
- Belong to red algae– **Gelidium, Porphyra**
- Gracilaria is a– **Red alga**
- Type of sexual reproduction is found in Volvox– **Oogamous**
- Agar-agar is commercially obtained from– **red algae**
- ..... is unicellular alga, rich in proteins, that is used as food supplements even by space travellers– **Chlorella**
- At least a half of the total CO_2 fixation on Earth is carried out through photosynthesis by– **Algae**
- Major photosynthetic pigments in green algae are– **Chl a and b**
- The chloroplast in green algae is– **Cup-shaped, Discoid, Reticulate**
- In most green algae, pyrenoids, the storage bodies, are located in– **Chloroplasts**
- Green algae usually have a rigid cell wall made of an inner layer of ..... and an outer layer of ..... **Cellulose, Pectose**
- A member of Class Chlorophyceae is– **Volvox, Chlamydomonas, Ulothrix**
- In Ulothrix, sexual reproduction takes place by– **Isogamy**
- Belongs to same class of alga– **Volvox, Chlamydomonas**
- The members of Phaeophyceae or brown algae are found primarily in / on– **Marine habitat**
- The pigments are found in brown algae– **Chl a, chl c and fucoxanthin**
- The possesses pyriform gametes that bear two laterally attached flagella– **Ectocarpus, Laminaria, Fucus**
- The organisms are known as chief producers in the oceans– **Diatoms**
- Groups of organisms are included under chrysophytes– **Diatoms & desmids (golden algae)**
- Chrysophytes are– **Planktons**
- The cell wall is composed of two thin overlapping shells ..... fit together like a soap case in– **Diatoms**
- Siliceous frustules of diatoms being indestructible, piled up at the bottom of ocean and formed a thick bed over billions of years. Such a thick bed is known as– **Diatomaceous earth**
- Diatomaceous earth is used for all except– **Biogas production**
- Dinoflagellates are mostly– **Marine & photosynthetic**
- A slide under microscope shows features– **Dinoflagellate**
- That group of organisms is represented– **Dinoflagellates**
- Red tides in warm coastal water develop due to the abundance of– **Dinoflagellates**
- Cyanobacteria are used in agricultural fields for crop improvement because they cause– **N_2 fixation**
- In Anabaena and Nostoc, ... are the sites for nitrogen fixation– **Heterocysts**
- Cyanobacteria are classified under kingdoms– **Monera**
- Algae forms motile colony is– **Volvox**
- In green algae, vegetative reproduction usually takes place by– **Fragmentation, Formation of different types of spores**
- Chlorophyll a, c, carotenoids and xanthophylls are present in– **Phaeophyceae**
- Pyrenoids are made up of– **Proteinaceous centre surrounded by starchy sheath**
- Carrageen is a water holding substance and obtained from– **Red algae**
- Main pigment in phaeophycene (Brown algae) is– **Fucoxanthin**
- In green algae, the plant body is usually attached to the substratum by a– **Holdfast**
- Food reserve in Rhodophyceae (red algae) is– **Floridean starch**
- Some species of marine algae are used as food. These are– **Porphyra, Laminaria, Sargassum**
- Kelps may reach a height of– **100 metres**
- Fusion of two morphologically similar but physiologically different gametes- **Isogamy involves**
- Example of filamentous algae– **Spirogyra, Ulothrix**
- Agar is an important commercial product which is produced by two Red Algae, These algae are– **Gelidium, Gracilaria**
- The chlorophyll pigments present in chlorophyceae (Green Algae) are– **Chlorophyll a and b**
- Cell wall of Spirogyra is composed of– **Pectose, Cellulose**
- Laminarin is the stored food in– **Dictyota**
- In Gracilaria, sexual reproduction is– **Oogamous**
- Chlamydomonas, Volvox, Ulothrix, Spirogyra and Chara are examples of– **Green algae**
- 'Non-flagellated' gametes occur in– **Spirogyra**
- During asexual reproduction, in most of brown algae, zoospores are produced– **Pear-shaped with two flagella**
- Brown algae is– **Sargassum**
- All algae have two photosynthetic pigments in common– **Chlorophyll a and carotenes**
- Groups of algae, belongs to class rhodophyceae– **Gracilaria, Gelidium, Porphyra, Polysiphonia**
- Sets-belongs to the same class of algae– **Volvox, Spirogyra, Chlamydomonas**
- The thallus organisation of Volvax is– **Colonial and Motile**

3.3 BRYOPHYTES

- The sporophyte is non foliar and partially dependent on gametophyte for water and minerals is - **Funaria**
- Funaria, Polytrichum and Sphagnum should have– **Diploid Zygote**
- Inconspicuous thalloid gametophyte is - **Prothallus**
- Starting of megaspore is a preparation of few heterosporous species to move towards seed habit - **In- situ germination**
- The bryophytes divided into– **Liverworts and hornwort mosses**

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- Bryophyta in plant kingdom is called– **Amphibians**
- The sperms can easily reach upto egg in the archegonium in bryophyta are dependent on - **Water**
- Moss peat is used as a packing material for sending flowers and live plants to distant places because– **It is hygroscopic**
- The dominant photosynthetic phase in the life cycle of pteridophyta is equivalent to the– **Gametophytic phase of bryophyta**
- ____ possess vascular tissues but lacks seeds– **Ferns**
- Liverworts reproduce asexually by– **Gemmae, Fragmentation**
- In mosses the sex organs are present in the– **Leafy stage**
- ..... is responsible for peat formation– **Sphagnum**
- Compared with the gametophytes of the bryophytes, the gametophytes of vascular plants tend to be– **Smaller and to have smaller sex organs**
- If the diploid number of a flowering plant is 36, what would be the chromosome number in its endosperm– **54**
- Protonema is– **Haploid and is found in mosses**
- A plant shows thallus level of organisation. It shows rhizoids and is haploid. It needs water to complete its life cycle because the male gametes are motile. It may belong to– **Bryophytes.**
- A gametophytic free living structure formed in pteridophytes is a - **Prothallus**
- Bryophytes include– **Mosses and liverworts**
- The bryophytes are usually found in– **Damp and shaded areas**
- Resemblances between algae and bryophytes include– **Thallus-like plant body, lack of vascular tissue, autotrophic nutrition**
- The prominent phase in the life cycle of bryophytes is– **Gametophyte**
- The female sex organ in Polytrichum and Funaria is – **Archegonium**
- Multicellular sex organs are found in– **Funaria, Polytrichum, Sphagnum**
- The Zygote in bryophytes develops in the– **Archegonium**
- The sporophyte is attached to the gametophyte in– **Bryophytes**
- Sporophytes are dependent upon gametophytes in- **Bryophytes**
- Peat, obtained from Sphagnum moss is used as– **Fuel**
- Asexual reproduction in liverworts takes place by– **Fragmentation of thalli and gemmae formation**
- Gemmae are asexual reproductive bodies of– **Liverworts**
- Gemmae are the specialised structures produced in liverworts. These are– **Green, multicellular, asexual buds which develop in gemma cups**
- Gemmae are multicellular green structures for vegetative propagation. These are found inside gemma cups in– **Marchantia thallus**
- Includes liverworts and mosses respectively– **Marchantia, Funaria**
- Funaria, the haploid structure is– **Protonema**
- The sporophytic phase in Funaria is well developed and composed of– **Foot, Seta and Capsule**
- ..... is not a mass– **Marchantia**
- Funaria requires water because– **Fertilisation occurs in water only**
- A moss sperm moves by means of– **Flagella**
- Peat is obtained from– **Sphagnum**
- Liverwort reproduce asexually by– **Gemmae, Fragmentation**
- In mosses the sex organs are present in the– **Leafy stage**
- Antherozoids represents– **Motile male gametes**
- Archegonium is– **Female sex organ**
- Plant succession on bare rocks or soil an important role of– **Bryophytes**
- Mosses are attached to substratum by– **Rhizoids**
- Mosses occur in moist places because they– **Require water for the transport of gametes**
- Foot, seta and capsule are the parts of– **Sporophyte in bryophytes**
- Bryophytes that prevent soil erosion by forming dense mats on the soil are– **Mosses**
- The packing material for trans-shipment of living material is obtained from– **Sphagnum**
- Ancestors of land plants were– **Green algae**
- Sporophyte of liverworts bears spores in– **Capsule**
- Bryophytes are also called amphibians of the plant kingdom because– **They require both land and water for survive**
- Sex organs are found on specialized stalked sexual receptacles called antheridiophore and archegoniophore in– **Marchantia**
- Branched rhizoids and leafy gametophyes are characteristic of – **Some bryophyte like mosses**

3.4 PTERIDOPHYTES

- A heterosporous pteridophyte is– **Salvinia**
- Ginger and Equisetum– **Similar in having rhizome**
- Main plant body is sporophyte which is differentiated into true stem roots and leaves - **Salvinia and Selaginella**
- Pteridophytic sporophytes bear sporangia that are subtended by leaf like appendages– **Sporophylls**
- Important in the development of seed habit– **Heterospory**
- In pteridophytes, reduction division occurs when– **Spores are formed**
- Haplo-diplontic condition is exhibited by– **Bryophytes**
- The main plant body is differential into true root, stem and leaves in– **Pteridophytes**
- In pteridophytes, fusion of gametes takes place in– **Archegonium**
- In selaginella the embryo develops into– **Sporophyte**
- In pteridophytes, the megaspore germinates to form– **Female gametophyte**
- The development of young embryos of pteridophytes within the female gametophytes is a precursor to the– **Seed habit**
- Genera like Selaginella, Salvinia produce two kinds of spores. Such plants are known as– **Heterosporous**

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- In pteridophytes, a spore germinates to produce– **Prothallus**
- The spread of living pteridophytes is limited and is restricted to narrow geographical region because– **Gametophytic growth needs cool, damp and shady places**
  There is requirement of water of fertilisation
- In pteridophytes, prothallus produces– **Antheridia and archegonia**
- The heterosporous pteridophytes are– **Selaginella and Salvinia**
- Heterosporous pteridophytes show certain characteristics, ... are precursor to the 'seed habit' in gymnosperms. One of such characteristics is– **Development of embryo inside the female gametophyte**
- Does not belong to class Pteropsida– **Selaginella**
- Evolutionatily, the first terrestrial plants to possess vascular tissues are– **Pteridophytes**
- The main plant body in Pteridophyte is– **Sporophytic**
- Pteropsida includes – **Pteris and Adiantum**
- Equisetum belongs to **Sphenopsida**
- The dominant phase in the life cycle of a pteridophyte is– **Sporophyte**
- Heterosporous pteridophytes is– **Selaginella and Marsilea etc.**
- In pteridophytes, the sporophyte is produced by the– **Zygote**
- Pteridophyte is not a– **Ginkgo**
- In pteridophytes, water is required for transfer of– **Antherozoids**
- Economic importance of pteridophytes in– **Medicinal ornamentals, soil binder**
- Fusion of male gamete with the egg present in the archegonium result in the formation of– **Zygote**
- Prothallus is– **Photosynthetic**
- Heterosporous is– **Salvinia**
- Pteriophytes include– **Horsetails, Ferns**
- Pteridophyta differs from bryophyta in having– **Vascular tissue**
- Plants having spores, xylem and phloem but lacking seeds are– **Pteridophytes**
- Macrophyllous leaves are found in– **Ferns**
- Sporangia produce spores in spore mother cells, method is– **Meiosis**
- Class lycopsida includes– **Selaginella, Lycopodium**
- In pteridophytes, zygote results in the production of multicelluar well-differentiated, dominant phase which is– **Sporophyte**
- Seed habit is linked with– **Heterospory**
- Development of Seed habit considered– **Heterospory**
- Genera like Selaginella and Salvinia produces spores known as– **Heterosporous**
- Leaf like structure in Pteridophytes that bear spores are called– **Sporangia**
- Prothallus represents the– **Gametophytic phase in Pteridophytes**
- Consisting of all genera exhibiting homospory group– **Equisetum, Psilotum, Lycopodium, Pteris**

3.5 GYMNOSPERMS

- In gymnosperms, branched stem is found is– **Pinus and Cedrus**
- Produce ovules which are borne on megasporophylls- **Ginkgo, Pinus, Selaginella and Cycas**
- Common in all the three, Funaria, Dryopteris and Ginkgo– **Presence of archegonia**
- Female strobili are present in– **Some gymnosperms**
- Gymnosperms differ from angiosperms in the– **Formation of endosperm before fertilization**
- Constitutes the dominant vegetation in colder regions– **Gymnosperms**
- A Monoecious plant– **Pinus**
- Eucalyptus is different from Cedrus in the presence of– **Triple fusion**
- Gymnosperms have– **Naked seed plant**
- _____ has both the male and female cones on same plant body– **Pinus**
- Coralloid roots have a symbiotic association with– **Nitrogen-fixing cyanobacteria**
- The cones bearing microsporophylls are known as– **Male strobili**
- Conifers are adapted to tolerate extreme environmental conditions because of– **Thick cuticle**
- The giant Redwood tree (Sequoia sempervirens) is a/an– **Gymnosperm**
- Plants of this group are diploid and well adapted to extreme conditions. They grow bearing sporophylls in compact structures called cones. The group in reference is– **Gymnosperms**
- Plants ..... posseses seeds but not fruits are– **Gymnosperms**
- Gymnosperms do not include– **Herbs**
- Mycorrhizal roots of ..... are associated with some fungal symbionts– **Pinus**
- Coralloid roots of ..... have symbiotic association with N_2 – fixing cyanobacteria– **Cycas**
- Gymnosperms has branched stems– **Pinus, Cedrus**
- The leaves of gymnosperms are well-adapted to withstand extremes of temperature, humidity and wind, because of features– **Needle-like leaves, Thick cuticle, Sunken stomata**
- Gymnosperms are all– **Heterosporous**
- In Pinus, male strobilus bears a large number of– **Microsporophylls**
- Heterospory is found in some members of ..... and all members of .....– **Pteridophyta, Gymnospermae**
- Structures are haploid in gymnosperms– **Pollen grain, megaspore**
- ..... do not have free living gametophyte– **Gymnosperms**
- Male cones and megasporophylls borne on different trees in– **Cycas**
- ..... is not the characteristic of Cycas– **Absence of archegonia**
- Fruits are not found in gymnosperms because– **They have no ovary**
- Gymnosperms are called naked seeded plants due to the absence of– **Ovary wall**
- Antheridium is not found in– **Gymnosperms**
- In coralloid roots, roots are short and irregularly arranged and exist in symbiotic association with– **Cyanobacteria**

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- Cycas male cones and megasporophylls are borne on - **different trees**
- Megasporangium in Gymnosperms is also called as– **Female strobili**
- A plant having seeds but lacking flowers and fruits belongs to– **Gymnosperms**
- The gymnosperms are ..... that means they produce different male and female spores– **Heterosporous**
- Roots of which gymnosperm have fungal association in the form of mycorrhiza– **Pinus**
- Adaptations in gymnosperms to withstand unfavourable conditions are– **Thick cuticle, Needle-like leaves, Sunken stomata**
- Megasporophyll is the term used in gymnosperm to denote– **Carpels**
- The male and female gametophytes do not have an independent free-living existence in– **Gymnosperms**
- The male or female cones may borne on same tree in– **Pinus**
- In gymnosperms, megaspore mother cell divides meiotically to form four megaspores. Out of four megaspores, one develops into a multicellular structure termed as– **Female gametophyte**

3.6 ANGIOSPERMS

- _____ angiosperm is almost microscopic– **Wolffia**
- Endosperm of angiosperm is– **Triploid**
- The embryo sac of an angiosperm is made up of– **6 cells and B nuclei**
- Antheridia and archegonia are absent in– **Angiosperms**
- An exceptionally large group of plants occurring in wide range of habitats– **Angiosperms**
- The role of double fertilization in angiosperms is to produce– **Endosperm**
- Polar nuclei fuse to produce– **Diploid secondary nucleus**
- Angiosperms differ from gymnosperms as they show– **Triple fusion, Double fertilization**
- The fusion product of two polar nuclei is referred to as– **Secondary nucleus**
- Seeds are present inside the fruit wall in– **Angiosperms**
- Embryo sac represents– **Female gametophyte**
- The smallest angiospermic flower is– **Wolffia**
- Angiosperms differ from gymnosperms in having– **Fruits**
- Double fertilization and triple fusion are characteristics of– **Angiosperms**
- Seed formation in angiosperm for necessary– **Ovule, Pollination, Double fertilization**
- In angiosperms, ploidy of embryo sac is– **Haploid**

3.7 PLANT LIFE CYCLES

- Life cycle of gymnosperm is– **Diplontic**
- Life cycle is exhibited by fucus– **Diplontic**
- All plants exhibit alternation of generations. This means their life cycle– **Has both a multicellular haploid stage and a multicellular diploid stage**
- The life cycle of Ectocarpus and Polysiphonia is– **Haplo-diplontic**
- Water is essential to develop a new plant body with respect to sexual reproduction. This statement is true plant group for– **Bryophytes & Pteridophytes**
- Some plant groups exhibit intermediate condition with respect to life cycle pattern. Which characteristic will not be exhibited by such kind of plant– **Meiosis takes place in zygote**
- Funaria requires water because– **Fertilization occurs in presence of water only**
- Angiosperms have dominated the land flora primarily because of their– **Power of adaptability in diverse habitat**
- Blue green algae store food in the form of α-granules and β-granules, α-granules are composed of cyanophycean starch and β-granules are composed of fat droplets. This cyanophycean starch is structurally related to– **Glycogen**
- The members of rhodophyceae are commonly called red algae because– **They show prodominance of r-phycoerythrin in their body**
- A plant shows sporophyte as a main generation. Its gametophyte shows rhizoids and is haploid. It needs water to complete its life cycle because the male gametes are motile. Identify the group it belongs– **Bryophytes**

3.8 MISCELLANEOUS

- Karyogamy and meiosis takes place in the basidium of– **Puccinia and Agaricus**
- Fusion of two motile gametes which are dissimilar in size is termed as– **Anisogamy**
- A plant shows thallus level of organisation. It shows rhizoids and is haploid. It needs water to complete its life cycle because the male gametes are motile. Identify the group belongs to– **Bryophytes**
- Plants of this group are diploid and well adapted to extreme conditions. They grow bearing sporophylls in compact structures called cones. The group in reference is– **Gymnosperms**
- The embryo sac of an angiosperm is made up of– **7 cells and 8 nuclei**
- Protonema is– **Haploid and is found in mosses**
- Hydrocolloid carrageen is obtained from– **Rhodophyceae only**
- Algae produce Carrageen is– **Red algae**
- Genera like Selaginella and Salvinia produce two kinds of spores. Such plants are known as– **Heterosporous**
- Gemmae are present in– **Some Liverworts**
- The pairs is of unicellular algae– **Chlorella and Spirulina**
- Floridean starch has structure similar to– **Amylopectin and glycogen**
- Strobili or cones are found in– **Equisetum**
- Phycoerythrin is the major pigment in– **Red algae**
- From evolutionary point of view, retention of the female gametophyte with developing young embryo on the parent sporophyte for some time, is first observed in– **Pteridophytes**
- Pinus seed cannot germinate and established without fungal association. This is because– **It has obligate association with mycorrhizae**
- Winged pollen grains are present in– **Pinus**

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EXAM POINT

Some Basic Classification of Plant	
Angiosperms and Gymnosperms are grouped under– **Phanerogams**	**VMMC-2012, 2002, JIPMER-2009, CG PMT-2008 Uttarakhand PMT-2008 BVP-2007, BHU PMT-2004**
Linnaeus system of plant classification is based on– **Morphological characters**	**Rajasthan PMT-2009 CMC Vellore-2009 Punjab MET-2009 UP CPMT-2009**
Natural system of classification proposed in– **Genera plantarum**	**TS EAMCET-10.05.2023, Shift-II**
Four plants are observed 'A' is a primitive land plant. 'B' is embryophytic archegoniate phanerogam. 'C' is autotrophic thallophyte showing haplontic lifecycle. 'D' is nonflowering plant with heterosporous sporangium. The plants found respectively are– **Marchantia, Ginkgo, Spirogyra, Selaginella**	**AP EAPCET-23.05.2023, Shift-I**
Benthem & Hooker divided plants into 3 classes which includes– **Dicotyledonae, Gymnospermae, Monocotyledonae**	**AP EAMCET-03.09.2021 Shift-II**
One of the following scientists was the earliest to attempt more scientific basis for classification– **Aristotle**	**AP EAMCET-03.09.2021 Shift-I**
The book 'Die Naturlichen Pflanzenfamilien' was written by– **Engler and Prantl**	**AP EAPCET-07.09.2021 Shift-I**
Systema Naturae books were contributed by– **Linnaeus**	**AP EAMCET-05.10.2021 Shift-I BCECE-2012**
New systematics introduced by Sir Julian Huxley is also called– **Biosystematics**	**AP EAMCET-25.09.2020 Shift-I**
Floral characters such as single whorl of perianth or no perianth and unisexual flowers pollinated by wind were considered as primitive characters in _____ system of classification– **Phylogenetic**	**SRM JEEE-2019**
The placement of order Ranales in the beginning is a merit in the– **Bentham and Hooker's system of classification**	**Kerala PMT-2008**
In Bentham and Hooker's system of classification the sub-class polypetalae and Gamopetalae have the cohorts in the ratio of– **1 : 1**	**AP EAMCET-2014**
Chromatophores take part in– **Photosynthesis**	**AIPMT (Re-Exam)-2015**
Tracheophyta consists of– **Pteridophytes, gymnosperms and angiosperms**	**UP CPMT-2009**
Plants reproducing by spores such as mosses and ferns are grouped under the general term– **Cryptogams**	**AIPMT-2003**
Organisms which obtain energy by the oxidation of reduced inorganic compounds are called– **Chemoautotrophs**	**AIPMT-2002**
Artificial system of classification was first used by– **Linnaeus**	**AIIMS-1999,1998 AIPMT-1989**
Phylogenetic classification is one which is based on– **Common evolutionary descent**	**AIPMT-1994**
Phytochrome is found in– **Bryophytes, pteridophytes and angiosperms**	**AFMC-2003**
Father of botany is– **Theophrastus**	**Punjab MET-2008**
A group of plants which are autotrophs, their sex organs are non-jacketed and whose zygotes secrete thick wall are called– **Thallophytes**	**Punjab MET-2007**
Systema naturae is concerned with– **Classification of plants and animals**	**CG PMT-2005**
Five kingdom classification includes– **Monera, Protista, Fungi, Plantae, Animalia**	**DUMET-2006**
Mosses are– **Amphibians of plant kingdom**	**Karnataka CET-2013**
The natural system of classification proposed by– **Bentham and Hooker**	**BVP-2011 DUMET-2003, AIPMT-1988**
Oswald and Tippo has divided plant kingdom in to– **Two sub kingdoms**	**Rajasthan PMT-1997**
The basis of phenetic classification is– **Observable characteristic of existing organisms**	**Manipal-2014**
Sub-phyla are present in tracheata according to Tippos classification of kingdom plantae are– **4**	**Manipal-2001**
Botanical herbarium of India are classified according to classification of– **Bentham and Hooker**	**Rajasthan PMT-2001**

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In the prothallus of a vascular cryptogam, the antherozoids and eggs mature at different times. As a result– **Self-fertilization is prevented**	**BCECE-2012**
The division of the plant kingdom into Prokaryota and Eukaryota is based on the character of– **Nucleus**	**CG PMT-2004**
Order - Inferae belongs to– **Gamopetalae**	**BVP-2011**
Archegonia are found in– **Gymnosperm**	**BVP-2011**
Bentham and Hooker proposed their classification in book– **Genera Plantarum**	**WB JEE-2008**
A system of classification in which a large number of traits are considered is– **Natural system**	**Punjab MET-2010**
Two plants can be conclusively said to belong to the same species if they– **Can reproduce freely with each other and form seeds**	**AIPMT-2007**
According to classification of Ostwald Tippo; plant kingdom is divided into– **Thallophyta and Embryophyta**	**UP CPMT-2014**
Heterothalism was discovered by– **Blakeslee**	**UP CPMT-2006**
Methodical study of plants, dealing with identification, naming and classification- **Systematic botany**	**J&K CET-2009**
A plant which lives for a few days is called– **Ephemeral**	**JCECE-2010**
Diversification in plant life appeared– **Due to long periods of evolutionary changes**	**Manipal-2007**
Classification based on chromosome number is– **Cytotaxonomy**	**BCECE-2005**
Heterospory is the production of– **Large and small spores**	**Punjab MET-2003**
Heterospory is considered important in the development of– **Seed habit**	**Kerala PMT-2015**
The non-nucleated, unicellular organisms of Whittaker's (1969) classification are included in the kingdom– **Monera**	**CG PMT-2007**
Two kingdom system of classification was given by– **Linnaeus**	**Haryana PMT-2002**
Five-kingdom scheme to classify living beings has been proposed by– **R. H. Whittaker**	**CG PMT-2011, 2009**
System of classification proposed by Linnaeus– **Sexual system of classification**	**Haryana PMT-2008** **CG PMT-2006**
Gall nuts on plants in produced by– **larva of dipterous insects**	**BHU PMT (Screening)-2011**
One of the example of non- embryophyta is **Ulothrix**	**BHU PMT (Screening)-2011**
In Bentham and Hooker's classification the way of arrangement of the three series of polypetalae reflects. This gradual evolution of flower from– **Hypogyny to epigyny**	**AP EAMCET-2002**
Huxley is father of– **Neo-taxonomy**	**Haryana PMT-2008**
Hutchinson taxonomist described classification of plant in families of– **Flowering plant**	**BVP-2013**
The book Historia Plantarum was written by– **Theophrastus**	**AP EAMCET-2000**
The vascular cryptogames are– **Pteridophytes**	**Rajasthan PMT-2000**
Term New Systematic was given by– **Julian Huxley**	**BCECE-2008**
Dense evergreen vegetation of broad sclerophyllous leaves and shrubs with fire resistant resinous plants is known as– **Chaparral vegetation**	**Haryana PMT-2011**
The genera that lacks cotyledons but is placed with dictoyledonous plants, in classification is– **Cascuta**	**AMU-2001**
Algae	
Agar-agar is obtained from– **Red algae (Gracilaria, Gelidium)**	**VMMC-2012, 2011, 2010** **UP CPMT-2012, 2008** **BVP-2012, JIPMER-2009** **MGIMS Wardha-2008** **CMC Ludhiana-2008** **AFMC-2003, BCECE-2002** **BVP-2001** **Rajasthan PMT-2006, 2000** **AMU-2006, 1996, 1995**

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Laminaria is a– **Phaeophycean algae**	**Kerala PMT-2012 UP CPMT - 2010 Punjab MET - 2009 AFMC-2000, BVP-2000**
Zygote of Spirogyra produces four haploid nuclei, in which– **One is functional**	**Uttarakhand PMT-2004 Manipal-2004 UP CPMT-2001, AMU-2005**
Iodine is obtained from– **Laminaria**	**CMC Vellor -2013 Haryana PMT - 2011 MGIMS Wardha-2008 JIPMER-2008 BHU PMT (Screening)-2007**
Spirogyra is known as– **Pond silk**	**HP CET-2011, CG PMT-2010 BCECE-2006, VMMC-2005 AMU-2004**
Cephaleuros is a– **Parasitic alga**	**JIPMER-2018 Rajasthan PMT - 2005 Uttarkhand-2005 BVP - 2002, BHU PMT-2001**
Floridean starch is the stored food in– **Gracilaria**	**TS EAMCET-10.05.2023, Shift-II**
Female sex organ in Polysiphonia of Rhodophyceae– **Carpogonium**	**TS EAMCET 10.05.2023 Shift-I**
Phaeophyceae and Rhodophyceae classes of algae possess– **Pigment fucoxanthin and pigment phycoerythrin, respectively**	**RE-NEET (UG)-06.06.2023 (Manipur)**
Reserve food in the form of floridean starch and the soluble sugar-floridoside is found in– **Rhodophyta**	**Karnataka CET - 2023 AMU-1998**
Agarose is a natural polymer extracted from– **Sea Weeds**	**AP EAPCET-11.07.2022 Shift-I**
Air bladders are found in the following plant– **Fucus**	**AP EAPCET-11.07.2022 Shift-I**
Hydrocolloid carrageen is obtained from– **Rhodophyceae**	**NEET-2022, 2021**
In Oogamy, fertilization involves– **A large non motile female gamete and a small motile male gamete**	**AP EAMCET-03.09.2021 Shift-II**
Ectocarpus algae contains mannitol as reserve– **Food material**	**NEET-2021**
The plant body having holdfast, stipe and frond is a characteristic of– **Laminaria (Phaeophyceae)**	**Karnataka CET-2021**
Female reproductive structure of chara is– **Nucule**	**AP EAMCET-25.09.2020 Shift-II**
Floridean starch has structure similar to– **Amylopectin and glycogen**	**NEET-2020 Phase-I BHU PMT (Mains)-2011**
Isogametes are found in– **Cladophora**	**GUJCET-2020**
The major pigments present in the members of Rhodophyceae are– **Chlorophyll a, d and phycoerythrin**	**TS EAMCET-03.05.2018 Shift-I AFMC - 2007, AIPMT-2000**
Shape of chloroplast of Ulothrix is– **Girdle-shaped**	**JIPMER-2018**
Eyespot is seen in– **Chlamydomonas**	**JIPMER-2018**
Palmella stage is present in– **Chlamydomonas**	**JIPMER-2018, BHU PMT - 2002**
Motile zoospores are produced by– **Chlamydomonas**	**MHT CET-2017**
Rhodophyceae class of Algae reproduces asexually by non-motile spores and sexually by– **Non-motile gametes**	**Karnataka CET-2017**
Mac-Conkey medium is an example of– **Differential medium**	**SRM JEEE -2017**
A nitrogen fixing blue green alga is– **Anabaena**	**SRM JEEE -2017**
The simple type of plant body in which a single cell performs all the vital functions of life is referred to as– **Unicellular**	**SRM JEEE -2017**
Zygotic meiosis is characteristic of– **Chlamydomonas**	**NEET-2017, Manipal-2011**
An example of colonial alga is– **Volvox**	**NEET-2017, Manipal-2010**
Sargassam algae exhibits– **Gametic meiosis**	**Uttarakhand PMT-2011**
Cyanophycean algae are much important from point of view of– **Soils fertility**	**Uttarakhand PMT-2011**
Cell wall of Chlamydomonas contains– **Glycoproteins**	**J&K CET-2002**
The thallus of Volvox is called– **Coenobium**	**JCECE-2005, Manipal-2000 AIIMS-1994**
Iodine is obtained from the members of– **Brown algae**	**CMC Vellore-2013**
Hormogonia are vegetative reproductive structure of– **Nostoc, Oscillatoria etc.**	**BHU PMT (Mains)-2010, 2006 Manipal - 2002**

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Sexual reproduction in Spirogyra is morphologically characterized by– **Isogamy**	**BVP-2002**
Cell wall contains cellulose pectin and polysulphate esters are a character of– **Rhodophyceae**	**Kerala PMT-2012**
The green algae rich in proteins used as food supplements even by space travellers is– **Chlorella**	**Kerala PMT-2012 AIPMT-1997**
Green, Red and Brown the correct order of colours with respect to– **Pigments, chlorophyll, phycoerythin and fucoxanthin**	**Kerala PMT-2012**
Trichodesmium erythrium which gives colour to red sea is a– **Blue green alga**	**AP EAMCET-2014**
Incipient nucleus is present in– **Myxophyceae**	**BVP-2000**
Triphasic life cycle is found in– **Polysiphonia**	**AIIMS-1995**
Reticulate chloroplast is found– **Oedogonium**	**AIIMS-1995**
Spirogyra shows isogamy with– **Non-flagellated gametes**	**AIPMT-2014**
Spirogyra is an example of– **Chlorophyllous thallophyte**	**Karnataka CET-2011**
Sexual reproduction in Spirogyra is an advanced feature because it shows– **Physiologically differentiated sex organs**	**AIPMT-2003**
Ulothrix filaments produce– **Isogametes**	**AIPMT-1997, BVP - 2001**
Brown algae is characterised by the presence of– **Fucoxanthin**	**AIPMT-1997**
The pyrenoids are made up of– **Proteinaceous centre and starchy sheath**	**UPCPMT-2011, JIPMER-1996 AIPMT-1995, 1993**
In Chlorophyceae, the mode of sexual reproduction is– **Isogamy, anisogamy and oogamy**	**AIPMT-1994, JIPMER-2004 Punjab MET-2003**
Chloroplast of Chlamydomonas is– **Cup-shaped**	**AIPMT-1993**
In Ulothrix/Spirogyra, reduction division (meiosis) occurs at the time of– **Zygospore germination**	**AIPMT-1993**
The common mode of sexual reproduction in Chlamydomonas is– **Isogamous**	**AIPMT-1991**
The product of conjugation in Spirogyra or fertilization of Chlamydomonas is– **Zygospore**	**AIPMT-1991**
Zygospore formed in Spirogyra is different based on its– **Nucleus**	**AP EAMCET-2008**
Algae are useful because they– **Purify the atmosphere**	**AIIMS-2002**
In blue-green algae, photosystem-II contains important pigment concerned with photolysis of water. It is a– **Phycocyanin**	**AIIMS-2015**
Water blooms are formed by– **Planaktonic algae**	**J&K CET-2000**
In chlamydomonas the life cycle– **Haplontic**	**J&K CET-2000**
Spirogyra algae shows– **Physiological anisogamy**	**JCECE-2002**
There exists a close association between the alga and the fungus within a lichen. The fungus– **provides protection, anchorage and absorption for the alga**	**Uttarakhand PMT-2010**
In Spirogyra, a brief period of tetranucleate condition is found in– **Germinating zygote**	**Uttarakhand PMT-2010**
Phycology is the study of– **Algae**	**AMU-2009, Punjab MET-2008**
A ring of multicilliate zoogonidium is found in– **Oedogonium**	**Punjab MET-2007**
Blue green algae groups of algae have– **Prokaryotic organization**	**Karnataka CET-2005**
Algae have cell wall made up of– **Cellulose, hemicellulose and pectins**	**AIPMT (Screening)-2010**
PGA as the first CO_2 fixation product was discovered in photosynthesis of–**Algae**	**AIPMT (Screening)-2010**
In Spirogyra sometimes a ladder like structure is present due to– **Scalariform conjugation**	**JIPMER-2004 Punjab PMT - 2003 Punjab MET-2003**
Mannitol is reserve food in– **Phaeophyceae**	**JIPMER-2004 PUNJAB - MET - 2003 AIPMT - 2009**
Multiplication by fragmentation is common to multicellular fungi, filamentous algae and– **Protonema of mosses**	**AIPMT (Screening)-2012**
Specialized cells for fixing atmospheric nitrogen in Nostoc are– **Heterocysts**	**NEET (Karnataka)-2013**
If you are asked to classify the various algae into distinct groups– **Types of pigments present in the cell**	**AIPMT-2007**
The lower most cell of filamentous algae Ulothrix is characterised by–	**UP CPMT-2014**

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Presence of nucleus and non-chlorophylls	
Smallest plant which contain green pigment such as higher green plant is– **Chlorophyceae**	**UPCPMT-2002 VMMC -2007**
Experiment to demonstrate importance of nucleus in the controlling growth and heredity were performed on– **Acetabularia**	**BVP-2006**
Reserve food material of algae is– **Starch**	**BCECE-2005**
Phycocolloids are obtained from– **Brown algae**	**UP CPMT-2010**
Pigments common to all algae are– **Chlorophyll-a and carotenoids**	**BVP-2012 MGIMS Wardha-2007 BCECE-2009**
Hormogonia are vegetative reproductive structures of– **Oscillatoria**	**Manipal-2012**
In algae, the bacteriological filter is– **Cosmarium**	**AFMC -2011**
Presence of basal rhizoidal cell in Ulothrix is an example of– **Beginning of division of labour**	**BHU PMT (Mains)-2009**
The plants of Cladophora crispata occur as– **Epizoic**	**BHU PMT (Mains)-2005**
Chloroplasts of Spirogyra have– **Smooth or waxy at the margins**	**HP CET-2011 BCECE-2006**
Chlorophyceae classes is not a representative of– **Green - algae**	**MGIMS Wardha-2013**
Major pigments found in Phaeophyceae, i.e. brown algae are– **Chlorophyll a, c and fucoxanthin**	**HP CET - 2013 J&K CET-2014**
Carrageen is obtained from– **Red Algae**	**CMC Ludhiana - 2007 VMMC-2002**
Mannitol is a stored food material found in members– **Phaeophyceae**	**J&K CET-2012**
Solar energy transducer is– **Chlorella**	**AMU-2011**
Algae which are called gulf weed are– **Sargassum**	**AMU-2011**
The commercially exploited algae include– **Gelidium, Laminaria and Porphyra**	**AMU-1999**
The red colour of rhodophyta is due to the preponderance of– **Phycoerythrin**	**AMU-1999, 2012**
A protein rich green alga is– **Chlorella**	**MGIMS Wardha-2004 UP CPMT-2004**
Cell wall of red algae contains– **Cellulose + pectin + polysulphate esters**	**HP CET-2013**
Cell wall of green algae is made up of– **Cellulose**	**Rajasthan PMT-1998**
Laminaria (kelp) and Fucus (rock weed) are the example of– **Brown algae**	**UP CPMT-2001**
Chlorophyll - b differs from chlorophyll - a in that it does not have– **CHO**	**BVP-2013 CG PMT-2007**
Cladophora occurs in fresh as well as– **Marine water**	**Uttarakhand-2005**
Source of kelp is– **Brown algae**	**Haryana PMT-2007**
A term helotism is used for the symbiosis of– **Algae and fungi**	**AMU-2006**
Heterotrichous habit is shown by– **Stigeoclonium**	**JIPMER-2000**
The diploid phase in the life cycle of Spirogyra is represented by– **Zygospore**	**AP EAMCET-2001**
Characteristics of Cyanophyceae is– **Phycocyanin**	**CG PMT-2006**
Synzoospore is found in– **Vaucheria**	**BHU PMT (Screening)-2011**
External fertilization occurs in majority of– **Algae**	**DUMET-2009**
Genera belong to the same class of algae– **Volvox, Spirogyra, Chlamydomonas**	**BVP-2013 DUMET-2009**
Conjugation occurs in– **Spirogyra**	**DUMET-2001**
In Spirogyra a brief period of tetranucleate condition is found in– **Germinating zygote**	**AP EAMCET-2002**
A water fern which is used as a green manure in rice fields is– **Azolla**	**Haryana PMT-2010**
Spirulina is used as a source of– **Proteins**	**CMC Ludhiana-2014**
The narrow middle part of chromatophore in Euglena is– **Pyrenophore**	**AP EAMCET-2000**
The red colour of red sea is due to– **Trichodesmium blue-green algae**	**Rajasthan PMT-2006**
Sexual reproduction in Spirogyra is an advanced feature because it shows– **Physiologically differentiated sex organs**	**JCECE-2015**

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Neuromotor apparatus is not visible through electron microscope in– **Chlamydomonas**	**Rajasthan PMT-2000**
Ulothrix releases zoospore during– **Morning**	**BCECE-2008, UP CPMT-2006**
Calcium encrustation and larvicidal properties are present in– **Chara**	**AMU-2003**
Filaments, in which lateral conjugation occur are homothallic in- **Spirogyra**	**AMU-2003**
Bryophytes	
The amphibians of plant kingdom are– **Bryophytes**	**TS EAMCET-10.08.2021 Shift-I HP CET-2013, BCECE-2009 JIPMER-2004 VMMC-2003, 2002 DUMET-2001 Haryana PMT - 2000 AIPMT - 1996**
In Funaria capsule, dispersal of spores takes place through– **Peristomial teeth**	**CMC Ludhiana-2011 AP EAMCET-2011 VMMC-2011 BHU PMT (Screening)-2009 Uttarakhand PMT-2009 MP CPMT-2009, AMU-2005 Manipal-2004, UP CPMT-1995**
Protonema occurs in the life cycle of– **(Moss) Funaria**	**JIPMER-2012, BVP-2012 Manipal-2012, VMMC-2011 Uttarakhand PMT-2009 BHU PMT (Screening)-2009 CG PMT-2006 AIPMT-1993, 1990**
Sphagnum is known as– **Bog moss**	**AIPMT-2014, Manipal - 2012 AFMC - 2010, UP CPMT-2010 CG PMT-2009 Haryana PMT-2009**
In Funaria, stomata are present on the– **Capsule**	**CG PMT-2010, BCECE-2010 CMC Vellore-2009 Punjab MET-2009 Rajasthan PMT-2009 MGIMS Wardha-2008 Haryana PMT-2007 UP CPMT-2001**
In bryophytes– **Sporophytes are dependent upon gametophytes**	**Punjab MET-2003 AFMC - 2000, AIPMT-1994 Rajasthan PMT-1998**
Bryophytes can be separated from algae, because they– **Possess archegonia**	**VMMC-2002 Haryana PMT-2000,2001 AIPMT-1997, 1999 AIPMT-1997**
Calyptra develops from– **Venter wall of archegonium**	**JIPMER-2012, 2009 BHU PMT (Screening)-2009 Uttarakhand PMT-2009 Rajasthan PMT - 1998**
Funaria gametophyte is– **Monoecious and autoecious**	**MGIMS Wardha-2010 MP PMT-2004, 2001 AIIMS-2001, AMU-1990**
In bryophytes, the posterior part of archegonium grows to protect the embryo. It is– **Calyptras**	**BHU PMT (Mains)-2009 Haryana PMT-2008 Rajasthan PMT-2006 BHU PMT-2002 Rajasthan PMT-1998**
Selaginella belongs to class– **Lycopsida**	**TS EAMCET-10.05.2023, Shift-II**
Capsule producing spores and Pseudo-elaters are found in– **Anthoceros**	**TS EAMCET 10.05.2023 Shift-I**
Intercalary meristamatic zone, paraphyses, Elaeters are the characters of these Bryophytes respectively– **Anthocerotopsida, Bryopsida, Hepaticopsida**	**AP EAPCET-23.05.2023, Shift-I**
The Juvenile stage in Mosses is called as– **Protonema**	**AP EAMCET-12.07.2022 Shift-II**
Riccia fluitans is an example of– **Aquatic floating bryophytes**	**Tripura JEE-2021**
Gemmae are present in– **Some Liverworts**	**NEET-2021**
Sphagnum bryophytes is used as a– **Fuel**	**AP EAMCET-25.09.2020 Shift-II**

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Plants like Marchantia and Funaria produce gametes by mitosis, because– **Plant body is haploid**	Karnataka CET-2019
Walking fern propagates through– **Leaf tip**	AIPMT-2004
Female reproductive organ of Riccia is known as– **Archegonium**	Rajasthan PMT-1996
The sporophyte of Funaria begins development within– **Archegonium**	UP CPMT-2010
Vegetative reproduction in Funaria takes place by– **Fragmentation and budding in the secondary protonema**	UP CPMT-2011
Funaria's male gametes are– **Biflagellate**	AIPMT-1999
Apophysis in the capsule of Funaria is– **Lower part**	AIPMT-1990
In a moss the sporophyte is– **Partially parasitic on the gametophyte**	AIPMT-2006
Moss has the largest– **Gametophyte**	AIPMT-1991
The plant group that produces spores and embryo but lacks vascular tissues and seeds is– **Bryophyta**	Manipal - 2013 AIPMT-1992
Multicellular branched rhizoids and leafy gametophytes are the characteristics of– **Some bryophytes**	AIPMT-1997
Elater mechanism for spore dispersal is exhibited by– **Marchantia**	AIIMS - 2002, AIPMT-1996
Buxbaumia aphylla is a– **Saprophytic bryophyte**	JIPMER-2008
Chlorenchyma is known to develop in the– **Spore capsule of a moss**	AIIMS-2008
Vascular tissues is not a characteristic feature of– **Algae and Bryophytes**	Karnataka CET-2005
Meiosis in Funaria occurs in– **Spore mother cells**	AP EAMCET-1998
In bryophytes and pteridophytes, transport of male gametes requires– **Water**	NEET-2016 Phase-I
Male and female gametophytes are independent and free-living in– **Sphagnum**	AIPMT (Screening)-2010
The plant body is thalloid in– **Marchantia**	NEET (Karnataka)-2013
Compared with the gametophytes of the bryophytes, the gametophytes of vascular plants tend to be– **Smaller and to have smaller sex organs**	AIPMT (Screening)-2011
Marchantia is considered as a heterothallic plant because it is– **Dioecious**	Karnataka CET-2014
Bryophytes resemble algae aspects– **Thallus like plant body, lack of vascular tissues and autotrophic nutrition**	Karnataka CET-2009 Manipal - 2009
Spore dissemination in some liverworts is aided by– **Elaters**	Rajasthan PMT-2010 AIPMT-2007
Mosses are attached to substratum by– **Rhizoids**	HP CET - 2012 UP CPMT-2005
Spore (n) is pioneer in gametophyte generation of– **Bryophytes**	UP CPMT-2014
Mosses occurs in moist places because– **Their gametes fuse in water**	VMMC-2006, UPCPMT-2002
In ferns and mosses, movement of antherozoids towards female component is called– **Chemotactic movement**	Rajasthan PMT-1998 Haryana PMT-2006
At the base of seta of capsule of moss, there is a haploid brownish growth called– **Veginula**	CMC Ludhiana-2007 Manipal-2006
In capsule of moss, shock absorbers are– **Trabeculae**	Manipal-2006
Calyptra and spore in moss capsule is– **Haploid/gametophytic tissue**	Manipal-2006
Difference between algae and bryophyte is– **Sterile jacket**	Rajasthan PMT-2004
The positive evidence of aquatic ancestory of bryophytes is– **Ciliated sperms**	BHU PMT-2002
In Funaria, calyptra is derived from– **Archegonium**	AFMC-2002
Formation of sperms from small clumps of cells is not a case of– **Epimorphosis**	Rajasthan PMT 2009 MGIMS Wardha-2004
In Sphagnum, the gametophyte structure compensating for the absence of seta is known as– **Pseudopodium**	VMMC-2006
The protective device over the developing sporophyte is shoot calyptra in– **Frullania**	VMMC-2006
Bryophytes lack true– **Roots, leaves and stem**	Uttarakhand-2005
Sex organs in Funaria develop– **At tip of gametophore**	Uttarakhand-2005
Largest moss is– **Dawsonia**	MGIMS Wardha-2009 Haryana PMT-2009 CG PMT-2009
Thallus of Riccia is– **Haploid**	JIPMER-2001
Mosses are indicator of– **Air pollution**	Manipal-2013

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The peculiar feature of Marchantia palmata is– **Presence of androgynous receptacles**	**VMMC-2005 AMU-2004**
Embryo is found in– **Funaria**	**CG PMT-2006**
Diatoms do not decay easily because– **They have siliceous walls**	**BHU PMT (Screening)-2011**
The brown hairs present at the base of the petiole of Pteris are called– **Ramenta**	**AP EAMCET-2002**
SR Kashyap is regarded as father of– **Indian Bryology**	**BVP-2013**
The sporogenous tissue is originated from amphithecium in– **Anthoceros**	**Rajasthan PMT-2000**
Spore of Funaria on germination gives rise to– **Protonema**	**BCECE-2008**
Tissue differentiation is well developed in– **Bryophyrtes**	**UP CPMT-2013**
Unicellular smooth and tuberculated type of rhizoids are present in– **Riccia**	**Rajasthan PMT-2006**
Pteridophytes	
Aquatic fern is used to increase the yield in paddy crop– **Azolla**	**Tripura JEE-2022 AMU-2007, BCECE-2003 AIPMT-2001, AIPMT-2000**
If a sporangium is derived from a single cell, it is called– **Leptosporangiate**	**AMU-2005, Manipal-2004 Uttarakhand PMT-2004 AMU -2000**
Walking fern propagates through– **Leaf-tip**	**CMC Ludhiana-2009 JCECE-2009, Manipal-2007 AIPMT-1998**
In Selaginella, the adaxial outgrowth, from the base of leaf, is called– **Ligule**	**BHU PMT (Mains)-2009 AMU-2005, Manipal-2004 Uttarakhand PMT-2004**
Genera like Selaginella and salvinia produce two kinds of spores. Such plants are known as– **Heterosporous**	**NEET-2021 BHU PMT (Screening)-2010 AIPMT-2008, BHU PMT-2002**
Plant that possess characters like ramenta, archaegonia, circinate– **Dryopteris**	**AP EAPCET-22.05.2023, Shift-I**
Silent features like Embriophytic, Tracheophytic, Cryptogams refers to– **Pteridophytes**	**AP EAMCET-03.09.2021 Shift-I UP CPMT-2012**
From evolutionary point of view, retention of the female gametophyte with developing young embryo on the parent sporophyte for some time, is first observed in– **Pteridophytes**	**NEET-2019**
A well developed archegonium with neck consisting of 4-6 rows and neck canal cells, characterises– **Bryophytes and pteridophytes**	**AIPMT-1995**
Pteridophytes differ from mosses/bryophytes in possessing– **Well developed vascular system**	**MP PMT-2013 AIPMT-1993**
Ectophloic siphonostele is found in– **Osmunda and Equisetum**	**AIIMS-2008, AIPMT-2005**
Prothallus of the fern produces– **Gametes**	**JIPMER-2012 BHU PMT (Screening)-2009**
In ferns, Meiosis takes place at the time of– **Spore formation**	**AIPMT-2000**
Selaginella and Salvinia are considered to represent a significant step toward evolution of seed habit because– **Embryo develops in female gametophyte which is retained on parent sporophyte**	**AIPMT (Mains)-2011**
In eusporangiate ferns, sporangium is produced from– **A group of sporangial initial cells**	**AP EAMCET-2011**
Pteridophytes are called vascular cryptogams, because they are non-seeded plants containing– **Xylem and Phloem**	**Karnataka CET-2012**
Dryopteris differs from Funaria in having– **An independent sporophyte**	**J&K CET-2004**
Coal is the fossil wood of– **Cryptogamic plants**	**BVP-2011**
The branch of biology that deals with the study of fossil is called– **Palaeontology**	**J&K CET-2010**
The trabeculae found in Selaginella are the modification of– **Endodermal cells**	**VMMC-2011 BHU PMT (Screening)-2009 Uttarakhand PMT-2009**
Antherozoids of Dryopteris are– **multiciliated and coiled**	**Punjab MET-2009**
Gametophytic and sporophytic phasess are independent in– **Pteridophyte**	**JCECE-2008**
In pteridophytes, phloem is without– **Companion cells**	**JIPMER-2013, Manipal-2010**

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The circinate vernation is the characteristic feature of ferns. It refers to– **Coiling of young leaves**	**Rajasthan PMT-2005 UP CPMT-2004**
Mesarch xylem is commonly found in– **Ferns**	**Punjab MET-1999**
Dispersal of spores in fern takes place through– **Annulus and stomium**	**AFMC-2005**
Antherozoids of pteridophyta are– **Much coiled and multiciliated, Pear-shaped**	**BCECE-2011**
Sometimes, the fern plant arises from fern prothallus without fertilisation. This is an example of– **Apogamy**	**BVP-2010**
The species of the following plant, are sometimes described as 're-surrection plants'– **Selaginella**	**BHU PMT (Mains)-2005**
A venter is a part of– **Archegonium**	**BHU PMT (Mains)-2005**
The dominant generation in pteridophytes is– **Sporophytic**	**UP CPMT-2012**
The bladder serving as floats and for trapping insects is found in– **Utricularia**	**J&K CET-2009**
Prothallus of Petridophytes is– **Iinconspicuous, small, multicellular, free-living, photosynthetic thalloid gametophyte**	**J&K CET-2014**
The green upright sterile hair-like structures among the antheridia of are known as– **Paraphyses**	**JIPMER-1997**
A fern differs from a moss in having– **Independent sporophytes**	**JIPMER-2012 BHU PMT (Screening)-2009 Uttarakhand PMT-2009**
Club moss is the common name of– **Lycopodium**	**JIPMER-2003**
In the prothallus of a vascular cryptogam, the antherozoids and eggs mature at different times. As a result of which– **Self - fertilization is prevented**	**Rajasthan PMT-2010**
Azolla is used as a biofertilizer because it– **Has association of nitrogen - fixing cyanobacteria**	**Rajasthan PMT-2010**
Dryopteris and moss does show– **Homospory**	**AMU-2011**
The present day higher green plants are believed to have evolved from– **Ferns**	**AMU-1999**
Telome theory of Zimmerman (1930) applies only to– **Pteridophytes**	**VMMC-2006**
Seed habit is developed first time in– **Some ferns**	**Rajasthan PMT-1998**
Fern gametophyte bears– **Antheridia and archegonia**	**Manipal-2000**
Leaf in young condition in fern is called– **Circinate ptyris**	**CMC Ludhiana-2008 AMU-2007**
Haploid brown, hairlike, delicate unicellular outgrowths are– **Rhizoids of fern plants**	**AP EAMCET-2004**
A tree fern is– **Cyathea**	**Haryana PMT-2002**
A mature ligule having a prominent basal portion is called– **Glossopodium**	**Manipal-2013**
Sporophyte of Dryopteris produces– **Spores**	**JIPMER-1995**
Sex organs in Pteris are produced on– **Ventral side of the prothallus**	**AP EAMCET-2001**
Reduction (meiotic) division in Pteridophyta occurs– **During spore formation**	**AFMC-2004**
Dictyostele is found in– **Fern**	**CG PMT-2006**
A tree growing in Indian Botanical Garden, Sibpur (Howrah, Calcutta) with age over 200 year, circumference 404m, prop roots 1,600 and whose main stem has decayed is– **Ficus benghalensis**	**CMC Vellore-2007**
Rhizophore of Selaginella is– **Organ sui generis**	**CG PMT-2011**
Equisetum pteridophyte is called as– **Horse tail**	**Manipal-2010**
Tracheophyta consists of– **Pteridophytes, gymnosperms and angiosperms**	**CMC Vellore-2009**
Leaf gap in the vascular cylinder in ferns is– **Parenchymatous zone**	**CMC Ludhiana-2011**
Botanical name of 'Sanjeevani' is– **Selaginella bryopteris**	**CMC Ludhiana-2008**
The rhyniophytes have– **Sporangia at the tips of thin branches**	**JCECE-2014**
Seed habit was first originated in members of– **Ferns**	**BVP-2006**
Most primitive members in which roots are not present, is– **Rhynia**	**BHU PMT (Screening)-2005**
Fern and Funaria pairs of plants are not– **Seed producers**	**JIPMER-2013**
Heterospory and seed habit are exhibited by a non - flowering plant which also possess– **Ligule**	**VMMC-2006, 2003 AMU-2006**

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First vascular plant is–	**Pteridophyta**	**AMU-2009**
In the chlorophyta, the reserve food of protein surrounded by starch, form a compact body termed as–	**Pyrenoid**	**JIPMER-1999**
In Pinus/Cycas/gymnosperms, the endosperm is–	**Haploid**	**TS EAMCET-28.09.2020 Shift-II** **JIPMER - 2013** **Punjab MET-2010** **Punjab MET-2008** **Rajasthan PMT-1998** **AMU-2009** **CG PMT-2011, 2007** **Haryana PMT-2007** **Rajasthan PMT-2006** **BVP-2005** **Haryana PMT-2004** **MGIMS Wardha-2003** **Manipal-2002, AMU-2002** **AP EAMCET-2001, AIPMT-1999** **AP EAMCET-1998** **JIPMER-1995, AIPMT-1988**
Gymnosperms are called naked seed plants because these lack–	**Ovary wall**	**BVP-2012** **CMC Ludhiana-2012** **UP CPMT-2011** **MGIMS Wardha-2011** **BVP-2010** **BHU PMT (Mains)-2010** **UP CPMT-2010** **BHU PMT (Screening)-2009** **BVP-2009** **Uttarakhand PMT-2009** **Haryana PMT-2009** **CGPMT-2009** **UP CPMT-2004** **Rajasthan PMT-2004** **MGIMS Wardha-2004** **JIPMER-2003** **Rajasthan PMT-2000** **MP PMT-2009, 1996** **JIPMER-1999**
Ginkgo is a living–	**Fossil**	**Assam CEE-2014, CG PMT-2009** **AMU-2009, Punjab MET-2008** **Punjab MET-2007** **JIPMER-2006, AMU-2006** **Uttarakhand-2005** **Rajasthan PMT-2001** **AMU-2001, Haryana PMT-2000** **Rajasthan PMT-2000, 1998**
Male cone of Pinus possesses–	**Microsporophyllus**	**Manipal-2014, BCECE-2012** **UP CMPT-2012, BVP-2012** **VMMC-2012, BCECE-2010** **JIPMER-2009, CG PMT-2008** **BVP-2008** **Rajasthan PMT-2008** **CG PMT-2008** **UP CPMT-2012, 2008** **BHU PMT(Screening)-2006** **MGIMS Wardha-2006** **BHU PMT (Screening)-2005**
Xylem with vessels is not the feature of–	**Gymnosperms**	**JIPMER-2009, UP CPMT-2012** **VMMC-2012, VMMC-2011** **UP CPMT-2008** **Rajasthan PMT-2008** **CG PMT-2008** **BHU PMT(Screening)-2005**
Cycas revoluta is popularly known as–	**Sago palm**	**JIPMER-2013** **MGIMS Wardha-2012** **UP CPMT-2010** **VMMC-2007** **Rajasthan PMT-2005** **Rajasthan PMT-1999** **UPCPMT-2002**

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Cycas is categorized under– **Living fossils**	**HP CET-2013, AFMC -2011 Haryana PMT-2011 Rajasthan PMT-2007 VMMC-2003 Haryana PMT-2000**
Companion cells is absent in the primary and secondary structure of stem of– **Pinus**	**AP EAMCET-2015 AFMC-2000, BVP-2001 Rajasthan PMT-1995**
Winged pollen grains are found in– **Pinus**	**BHU PMT (Screening)-2011 MGIMS Wardha-2011 CG PMT-2007 BHU PMT-2003, BVP-2002**
The smallest plant division-Gymnosperm has– **900 species**	**VMMC-2013, JIPMER-2003 NEET-1996, AIPMT-1996**
Resin or turpentine oil is obtained from– **Pinus**	**Manipal-2011, CG PMT-2006 MGIMS Wardha-2003 Rajasthan PMT-2001 AIPMT-1992**
Female cone of pinus is a– **Modified long shoot**	**JIPMER-2012, BVP-2009 Uttarakhand PMT-2009 BHU PMT (Screening)-2009**
The young meristematic cells of leaves and stem of gymnosperm has 16 chromosomes, the number of chromosomes in the endosperm of the same gymnosperm shall be– **8**	**MP PMT-2013 Manipal-2008 BVP-2007 AIPMT-1996**
The longest gymnospermic plant is– **Sequoia sempervirens**	**NEET-2016 Phase-I Rajasthan PMT-1999 VMMC-2002 AMU-2001**
Mycorrhiza is useful association because– **It enhances absorption of nutrients from soil**	**CMC Ludhiana-2008 DUMET-2006 AMU-2006 UP CPMT-2003 BHU PMT-2001**
Chilgoza pinus is– **Pinus gerardiana**	**BHU PMT (Screening)-2005 J&K CET-2001 Rajasthan PMT-2001 AMU-1999**
Pinus plants produces seeds but not produces- **Flowers**	**Rajasthan PMT-2007 AIPMT-2002 JIPMER-2002 AIPMT-1992**
Cycas unbranched tree hosts heterocystous symbiont in its modified– **Roots**	**TS EAMCET-30.07.2022 Shift-II**
Phloem in gymnosperms lack– **Sieve tube and companion cells**	**AP EAMCET-25.09.2020 Shift-II**
Small specialised roots called coralloid roots are associated with N_2-fixing cyanobacteria in– **Cycas**	**TS EAMCET-08.05.2019 Shift-I**
VAM is a type of– **Endomycorrhiza**	**MHT CET-2019**
Mycorrhiza is a relationship of roots of Pinus and– **Fungus**	**NEET-2019, BVP-2001**
Gymnosperms include - **Medium- sized tree or tall tree and shrubs**	**Uttarakhand PMT-2011 Manipal-2003**
Seed of Pinus possesses– **parent sporophyte as seed coat, perisperm etc.**	**J&K CET-2002**
Largest ovule in plant kingdom are found in– **Cycas**	**BHU PMT (Mains)-2010 AIPMT-1998**
Mycorrhiza exhibits the phenomenon of– **Symbiosis**	**BVP-2002**
Conifers are adapted to tolerate extreme environmental conditions because of– **Thick cuticle**	**NEET-2016 Phase-II**
Pinus gametophyte is not independent free– **Living existence**	**AIPMT-2015**
Top-shaped multiciliate male gametes and the mature seed which bears only one embryo with two cotyledons, are characteristic features of– **Cycas**	**AIPMT-2005**
In Pinus/gymnosperms, the haploid structure are– **Megaspore, pollen grain and endosperm**	**AIPMT-1989**
In Pinus, the pollen grain has 6 chromosomes then in its endosperm will have– **6 chromosomes**	**AIPMT-1992**

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Though Cycas has 2 cotyledons, this is not included in dicot because– **Naked ovule**	JIPMER-2005 Haryana PMT-2005 BHU PMT-2003
Cycas is classified as a gymnosperms due to its– **Naked ovule**	AIIMS-2014
Megasporophyll of *Cycas* has the same nature as– **Carpel**	AIIMS-2002
Sperm of Cycas is– **Multiflagellated and very large**	JCECE-2006
In Cycas, diploxylic condition is found in– **Leaflet**	Uttarakhand PMT-2010
The gymnospermic endosperm differs from an angiospermic endosperm because in gymnosperms it is– **Haploid and developed from female gametophyte**	MHT CET-2015
In Pinus, male and female reproductive structures occur– **On different branches of the same plant**	CG PMT-2005
Transfusion tissue for lateral conduction of water and food are found in– **Leaves of gymnosperms**	CMC Vellore-2015
Inverted omega-shaped vascular bundles are found in– **Rachis of Cycas**	CMC Vellore-2015
Wood of Cycas is– **Manoxylic and polyxylic**	Punjab MET-2006 DUMET-2004
Ephedra gymnosperm has the presence of– **Vessel**	DUMET-2004
Cycas circinalis is a source of– **Starch**	DUMET-2003
In Pinus– **both seeds and pollen grains are winged**	J&K CET-2001
Chilgoza is a– **Gymnosperm**	Rajasthan PMT-2003
Cycas contains– **Mucilagenous canal**	Rajasthan PMT-2001
Conifers differ from grasses in the– **Formation of endosperm before fertilization**	JCECE-2013
If Gnetum is not a flowering plant, it may be mistaken for a– **Dicot plant**	BVP-2006
Coralloid root is the feature of– **Cycas**	BHU PMT (Screening)-2005
Sago which we use as food comes from this plant– **Metroxylon rumphii**	Punjab MET-2011
Shorea robusta is the– **Hardest wood**	Punjab MET-2011
Angiosperms and Gymnosperms are grouped under– **Phanerogams**	Rajasthan PMT-2008 BHU-PMT (Screening)-2008
Water is not necessary for the fertilization of– **Cycas**	MGIMS Wardha-2012 Rajasthan PMT-1999
The coralloid root of Cycas has Anabaena (BGA), this type of association is called– **Symbiotic**	UP CPMT-2012
The chief water conducting elements of xylem in gymnosperms are– **Tracheids**	AIPMT (Screening)-2010
Pinus plants is– **Monoecious**	AIPMT (Mains)-2010 AIPMT-2009
The male and female gametophytes don't have free-living independent existence– **Cedrus**	JIPMER-2012 AIPMT-2008
Plant group with largest ovule, largest tree and largest gametes– **Gymnosperm**	AIPMT-2000
Gymnosperms are also called soft wood spermatophytes because they lack– **Xylem fibres**	AIPMT (Screening)-2012
Cycas and Adiatum resemble each other in having– **Motile sperms**	AIPMT (Screening)-2012
Presence of archegonia is common in all the three– **Funaria, Dryopteris and Gingko**	NEET (Karnataka)-2013
The gametophyte is not an independent, free living generation in– **Pinus**	AIPMT (Screening)-2011
A prokaryotic autotrophic nitrogen fixing symbiont is found in– **Cycas**	AIPMT (Screening)-2011
Gametophytic tissue is found in seeds- **Cycas**	AP EAMCET-2010
In gymnosperms, the pollen chamber represents– **A cavity in the ovule in which pollen grains are stored after pollination**	AIPMT-2007 JIPMER-2011
In Cycas, pollination takes place in– **3 celled stage**	JIPMER-2009
Sago economically important product is obtained from– **Cycas circinalis**	UP CPMT-2005
The ratio of mitotic divisions that take place in the microspore of Cycas before and after liberation from the microsporangium during the development of male gametophyte is– **1 : 1**	AP EAMCET-2013
The secondary xylem of Cycas is– **Manoxylic with large amount of parenchymatous cells**	UP CPMT-2014

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A gymnosperm, popularly known as sagopalm, possess two cotyledons, but is not classified as dicotyledons because– **Due to open and exposed ovules on megasporophyll**	UP CPMT-2014
The type of pollination in Cycas is– **Anemophily**	UP CPMT-2011 VMMC-2010
Both heterospory and circinate ptyxis occur in– **Cycas**	Punjab MET-2009 Rajasthan PMT-2009 Manipal-2003
Number of archegonia in Cycas is– **4**	JCECE-2008 UP CPMT-2007
Pinus seed is originated in– **Megasporophyll**	MGIMS Wardha-2003
In Cycas, coralloid roots has– **Anabaena**	Punjab MET-1999
No vessels are found in the wood of– **Pine**	AMU-2015
Mycorrhizal association is must for growth of– **Orchids**	BCECE-2011
Mycorrhiza acts as– **Root hairs with an advanced absorption capacity**	BHU PMT-2002
Mycorrhiza is– **Association of root and fungi**	BHU PMT (Mains)-2005 AMU-1998
In gymnosperms, the ovules are– **Naked unitegmic**	BHU PMT (Mains)-2011
In Cycas male gametes are produced in the pollen tube by division of– **Body cell**	BHU PMT-2001
Resin duct of gymnospermous stem is an example of– **Shizogenous cavity**	JCECE-2005 Punjab MET-2001,2004 Manipal-2000
The male and female gametophytes do not have independent free living existence is a characteristic feature of– **Gymnosperms**	Kerala PMT-2015
The roots of some higher plants get associated with a fungal partner. The roots provide food to the fungus while the fungus supplies water to the roots. The structure so formed is known as– **Mycorrhiza**	KVPY SA-2012
Root pressure has never been observed in– **Gymnosperms**	AMU-2011
Ectomycorrhiza is commonly found in– **Pinus and Quercus**	AMU -2000
A mature pollen grain of Pinus has– **4 cells**	Uttarakhand PMT-2009 BVP-2009 BHU PMT (Screening)-2009
Gymnosperm may be distinguish from angiosperm by– **Absence of true seed**	Rajasthan PMT-1998
Vegetative reproduction Cycas occurs by– **Bulbils**	Rajasthan PMT-1998 Haryana PMT-2006
Both have leaves, stem and roots is the similarity between– **Gymnosperms and Angiosperms**	CG PMT-2007
The terminal sterile portion of an organ, considered to be an equivalent of angiospermous stamen in Cycas, is known as– **Apophysis**	AP EAMCET-2003
Sago of Cycas is given to patients with stomach disorders because it is– **Easily digestible with less starch**	Haryana PMT-2002
Characters of both conifers and cycads are found in– **Ginkgo**	Haryana PMT-2009 CG PMT-2009
Cork is obtained from– **Quercus suber**	CG PMT-2009
Transfusion tissue is present in the leaves of Pinus and serve to conduct– **Water and food**	JIPMER-2001
Cleavage polyembryony occurs in– **Pinus**	BHU PMT (Mains)-2008
In Pinus, the third tier of embryonal cells from below is known as– **Rosette tier**	AMU-2005
The sclerenchyma of the hypodermis in the Pinus needle helps in– **Mechanical support**	VMMC-2005 AMU-2004, BVP-2003
Pollen grains in Pinus are– **Bisaccate**	J&K CET-2007
The non porous wood is present in– **Gymnosperms**	Rajasthan PMT-2000
The term gymnosperm was introduced by– **Theophrastus**	CMC Ludhiana -2013
In Pinus, the approximate time for the fertilization after pollination is– **about one year**	CMC Ludhiana-2011
The gymnosperm plant nearest to angiosperm is– **Gnetum**	CMC Ludhiana-2011
Many xerophytes accumulate this in response to stress– **Proline**	BCECE-2009

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If the number of chromosomes in the cells of nucellus in Pinus is 24, what would be the number of chromosomes in megaspore mother cell– **24**	**AMU-2001**
Algal zone is found in– **Coralloid roots of Cycas**	**AMU-2001**
Angiosperms	
Endosperm in angiosperms is– **Triploid structure**	**AIIMS-2013** **J&K CET-2012** **BHU PMT (Mains)-2010** **BVP-2008** **Haryana PMT-2007** **Uttarakhand PMT-2007** **VMMC-2007** **MHT CET-2006** **JCECE-2004** **Haryana PMT-2003** **UPCPMT-2002** **J&K CET-2000**
In angiosperms, the fusion of male gamete with the secondary nucleus is considered as "Second fertilization" because– **Secondary nucleus is a sister nucleus of the egg**	**AP EAMCET-12.07.2022 Shift-II** **MHT CET-2018** **J & K CET-2015** **Uttarakhand PMT-2008** **MHT CET-2008** **Manipal-2008** **BVP-2007** **VMMC-2006** **JIPMER-2004** **BHU PMT-2004**
Double fertilization was discovered by– **Nawaschin**	**MHT CET-06.10.2020 Shift-I** **MHT CET-2018** **Haryana PMT-2005** **BHU PMT-2003**
In an angiospermic plant female, gametophyte is represented by– **Embryo sac**	**Rajasthan PMT-1996** **Rajasthan PMT-2011** **UP CPMT-2010** **Haryana PMT-2002** **AP EAMCET-2000**
Largest flower is– **Rafflesia arnoldi**	**KVPY SB & SX-2016** **Punjab MET-2008** **AIIMS-1998** **Rajasthan PMT-1996**
The male gametophyte in angiosperm is reduced to– **Three cells**	**CMC Vellore-2009** **CG PMT-2009** **Rajasthan PMT-2009** **UP CPMT-2009**
Double fertilization is a characteristic of– **Angiosperms**	**CG PMT-2008** **Manipal-2008** **BVP-2007** **BVP-2005**
If an angiospermic male plant is diploid and female plant tetraploid, the ploidy level of endosperm will be– **Pentaploid**	**HP CET-2013** **Uttarakhand PMT-2008** **BHU PMT-2004** **VMMC-2003**
Double fertilization (or triple fusion) leading to initiation of endosperm in angiosperms, requires– **Fusion of 2 polar nuclei and second male gamete only**	**Haryana PMT-2010** **AFMC-2007** **AMU-2002** **UP CPMT-2001**
Male gametes in angiosperms are formed by the division of– **Generative cell**	**Rajasthan PMT-2010** **Haryana PMT-2008** **JIPMER-2008** **MHT CET-2004**
Negative geotropism is shown by the roots of– **Rhizophora**	**BVP-2011** **Rajasthan PMT-2006** **BVP-2004** **BCECE-2001**
Rafflesia is – **Total Root parasite**	**JIPMER-2012** **Uttarakhand PMT-2009** **JIPMER-2010** **Haryana PMT-2000**

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The smallest angiospermic flower is– **Wolffia**	**Punjab MET-2009 CMC Vellore-2009 UP CPMT-2009 Rajasthan PMT-2001**
Primary endosperm nucleus is formed by fusion of– **Two polar nuclei and one male gamete**	**Karnataka CET-20.05.2023**
In angiosperm, the haploid, diploid and triploid structures of a fertilized embryo sac sequentially are– **Synergids, Zygote and Primary endosperm nucleus**	**NEET (UG) 07.05.2023**
Number of cells in the Angiosperm pollen grains at the time of release are– **2 cells**	**AP EAMCET-12.07.2022 Shift-II**
One of the 2000 years old viable seed, discovered during the archeological excavation at king herold's near dead sea– **Phoenix dactylifera**	**Karnataka CET-2022**
Vivipary is a peculiar characteristic of– **Mangrooves**	**MHT CET-01.10.2020 Shift-I BVP-2014**
In angiosperms, the endosperm is classified on the basis of– **Development**	**MHT CET-07.10.2020 Shift-I**
The correct sequence of developmental stages of embryo in angiosperms is– **Proembryo → globular → heart shaped → horse shoe shaped**	**MHT CET-06.10.2020 Shift-I**
Sieve tube elements cell-type is not dead at maturity in– **Angiosperms**	**TS EAMCET-08.05.2019 Shift-I**
Hydrophily is a common phenomenon in– **Vallisneria /zostera**	**TS EAMCET-08.05.2019 Shift-I UP CPMT-2010**
The additional nuclear ploidy levels found in a diploid angiosperm species in full bloom compared to its vegetative stage are– **1N & 3N**	**KVPY SB & SX-2019**
In plants growing under environmental stress condition, seeds germinate while they are on the mother plant. An example for such a condition is– **Rhizophora**	**TS EAMCET-02.05.2018 Shift-II**
If the cells of the nucellus in the angiosperm ovule contains 24 chromosomes, the number of chromosomes in the endosperm of a self pollinated flower– **36**	**MHT CET-2017**
The megasporangium proper of an angiosperm ovule is represented by– **Nucellus**	**MHT CET-2017**
The plant Drosera is a– **Insectivorous**	**SRM JEEE -2017**
Triple fusion in angiosperm is the fusion of second sperm with– **Two polar nuclei**	**Punjab MET-2008**
Pineapple is a– **CAM plant**	**Punjab MET-2008**
Sucking roots are present in the plant– **Cuscuta**	**Punjab MET-2008**
Functional megaspore is the first cell of female gametophytic generation in– **Angiosperms**	**MHT CET-2016**
In Angiosperms, megaspores formed after meiosis of megaspore mother cell are arranged in– **Linear tetrad**	**MHT CET-2016**
The CORRECT sequence of events during double fertilization in Angiosperms is– **Porogamy, syngamy, triple fusion**	**MHT CET-2016**
In angiosperms, during development of embryo, the suspensor cells develop from– **Oospore**	**MHT CET-2015**
Seeds of the orchids are– **Light and dry**	**JIPMER-2002**
Double fertilization results in the production of– **Triploid nucleus**	**J&K CET-2005 BHU PMT (Mains)-2011**
The phloem of angiosperms differs from that of other vascular plants by the presence of– **Companion cells**	**CMC Vellore-2008**
An angiospermic leaf carries 16 chromosomes. The number of chromosomes in its endosperm will be– **24**	**CMC Vellore-2008**
Nerium plant shows multiple– **Epidermis**	**BVP-2007**
Pentadiplandra brazzeana produces a protein called brazzein which is about 2,000 times as sweet as sugar. This plant belongs to– **Africa**	**BVP-2006**
The plants which can refix CO_2 released during respiration and use it during photosynthesis are known as– **Succulents**	**BVP-2006**
The plants obtain its nitrogen from captured animal, then it is known as- **Insectivorous plant**	**BVP-2006**
Lack of slit like prop root is not a feature of– **Mangrove plant**	**BVP-2006**
Velamen tissue is found in– **Epiphytes**	**BCECE-2001**
The ovule in which the funicle, chalaza and micropyle lie in one vertical plane, is called– **Orthotropous**	**J&K CET-2011**
The fertilization in which male gametes are carried through pollen tube is known as– **Siphonogamy**	**Manipal-2008**

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The angiosperm showing symbiotic association with blue green algae is– **Trifolium**	**Punjab MET-2011**
Vivipary an undesirable character for annual crop plants because– **The seeds cannot be stored under normal conditions for the next season**	**JIPMER-2007**
The ability of the venus flytrap to capture insects is due to– **Rapid turgor pressure changes**	**JIPMER-2007**
Seeds possess spongy aril in– **Nymphaea**	**AP EAMCET-2007**
The ratio of components of male flower of Smilax, female flower of *Ruscus*, modified reproductive shoots of *Scilla* and *Tephrosia* is– **7 : 3 : 5 : 4**	**AP EAMCET-2010**
The group of plant belonging to xeropytes is– **Alfa-alfa, aloe, Ephedra**	**UP CPMT-2014**
Carnivorous plants are– **Autotrophs but show heterotrophic mode of nutrition**	**UP CPMT-2014**
The group of organism possess minimum number of chromosome is– **Haplopappus gracilies and Mucor hemolysis**	**UP CPMT-2014**
During the characteristic feature of angiosperm (double fertilization) one of the sperm fuses with egg cell and other sperm fuses with– **Central cell to form triploid tissue**	**UP CPMT-2014**
From evolutionary point of view, tracheids and sieve cells are more primitive than tracheae and sieve tubes respectively. The angiosperms have– **Tracheids, tracheae and sieve tubes**	**AP EAMCET-2009, 2011**
They secrete enzyme outside the body and absorbes the nutrients is correct regarding– **Saprophytic angiosperm**	**UP CPMT-2006**
Halophytes are– **Salt resistant**	**AMU-2009** **CMC Vellore-2010**
Nepenthes is an– **Insectivorous plant**	**AMU-2001**
Utricularia grows in– **Lakes and ponds as submerged hydrophyte**	**Uttarakhand PMT-2011**
Shock movement in touch me not plant is– **Seismonasty**	**Punjab MET-2008**
Interxylary as well as intraxylary phloem is present in– **Strychnos**	**Punjab MET-2007**
The branch of biology that deals with study of grasses is known as– **Agrostology**	**CMC Vellore-2015**
The most common type of ovule in angiosperms is– **Anatropous**	**Punjab MET-2009**
The most thoroughly studied of the known bacteria-plant interactions is the– **Gall formation on certain angiosperms by Agrobacterium**	**Manipal-2007**
Rarely among angiosperms the pollen grains influenced the endosperm. This is called as– **Xenia**	**UP CPMT-2004**
Neottia is a– **Saprophytic angiosperm**	**AFMC-2000**
A plant which lives on another plant but do not take food or anything from plant is called– **Epiphyte**	**AFMC-2005**
The ploidy of the pollen grain in Cyperus is– **n (Haploid)**	**BHU PMT-2003**
In Ficus inflorescence is– **Hypanthodium**	**Punjab MET-2003**
In CAM plants– **stomata open at night and close in day**	**Rajasthan PMT-2009** **JIPMER-2004** **Punjab MET-2003**
The Orobanche plant is– **Total root parasite**	**Punjab MET-2003**
Vivipary is present in– **Rhizophora**	**J&K CET-2009** **Rajasthan PMT-1996**
CAM plants ecologically comes under– **Succulent plants category**	**Rajasthan PMT-1996**
Cuscuta is a– **Parasitic plant**	**UP CPMT-2003** **AIPMT-2002** **BVP-2000**
Angiosperms differ from gymnosperms in– **Fruits**	**UP CPMT-2003**
A material which arrests cell division, is obtained from– **Colchicum**	**Uttarakhand PMT-2007**
Leucaena leucocephala is– **A small leguminous tree with edible fruits and seeds, A fodder plant as its pods and leaves are consumed by cattle and Called subabul in India**	**VMMC-2013**
Coconut fruit is dispersed by– **Water**	**Manipal-2011**
Haustorial root is exceptional to– **Cuscuta**	**AFMC -2011**
According to engler and prantl system the– **Monocots are placed before dicots**	**BHU PMT (Mains)-2011**

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Keystone species, as they produce large quantity of fruits; and their protection leads to conservation of animals dependent on them - **Figs**	DUMET-2010
Vegetative fertilization is also called– **Triple fusion**	J&K CET-2009
During the process of sexual reproduction in flowering plants, double fertilization involves– **fertilization of egg cell and a central cell by two male gametes brought by same pollen tube**	J&K CET-2014
The fleshy receptacle of syconous of fig encloses a number of– **Achenes**	BHU PMT (Screening)-2010
Grafting is successful in dicots but not in monocots because the dicots have– **cambium for secondary growth**	Rajasthan PMT-2010
In CAM plants, CO_2 acceptor is– **PEP**	MGIMS Wardha-2008
In Gloriosa, the tendrillar part is formed by– **Leaf apex**	AMU-2011
The wood used for making musical instruments as xylophone is– **Dalbergia**	AMU-2011
The component of cell wall of the vessel of an angiospenn is a complex compound of– **Coniferyl alcohol**	AMU-2011
If an angiospermic plant produces unisexual and bisexual flowers on the same plant, the condition would be termed as– **Polygamous**	AMU -2000
Cocos nucifera plant yields– **Oil and fibre both**	MGIMS Wardha-2004
Cuscuta which climbs up the support with help of loop formation around the support. This type of movement is called– **Nutation**	VMMC-2006
If the diploid number of an angiospermic plant is 24, the number of chromosomes in pollen grain, endosperm and integument will be– **12, 36, 24**	Manipal-2015
Female gametophyte of angiosperm consist of egg cell, synergids, antipodal cell and central cell. Out of them egg apparatus consist– **two synergids and one egg cell**	VMMC-2014
Eustele is present in– **dicots**	JIPMER-2000
Number of meiotic divisions necessary to produce 100 seeds in cyperus is– **200**	Manipal-2013
Triple fusion in angiosperm is the fusion of second sperm with–**Two polar nuclei**	AMU-2009
Tallest angiosperm is– **Eucalyptus**	AFMC-2004
A normal angiosperm embyo sac at the final stage of development has– **8 nuclei**	CG PMT-2006
Angiosperms differs from gymnosperms because– **vessel is present in its xylem**	CG PMT-2006
An example of a parasitic plant which is strictly epiphytic is– **Viscum**	BHU PMT (Screening)-2011
Utricularia is a rootless aquatic plant, in which a portion of the leaf forms a tiny sac for– **Trapping insects**	DUMET-2009
In embryo, cleavage brings about– **increased DNA content**	CG PMT-2011
Monocots and dicots are the two main classes to– **Angiosperm**	CMC Ludhiana -2013
Cycas resembles with angiosperms– **Pollen tube is the carrier of male gametes**	BCECE-2008
Water translocation in angiosperms is done by– **Xylem vessel system**	AIPMT-1990
Endosperm is the result of– **Double fertilization**	Punjab MET-2006
Respiratory roots in halophytes are positively– **Aerotropic**	BVP-2014
A example of CAM plant is– **Snake plant (Sansevieria trifasciata)**	AMU-2015
Number of chromosomes in an angiospermic plant is 14, then the number of chromosomes in synergid cells will be– **7**	JIPMER-2008
Muehlenbeckia belongs to this category– **Xerophyte**	AP EAMCET-2000
In Angiosperm all the four microspores of tetrad are covered by a layer which is formed by– **Callose**	AIPMT-2002
In Angiosperms pollen tube liberate their male gametes into the– **Synergids**	AIPMT-2002
A piece of wood having no vessels belongs to– **Pine**	Assam CEE-2014
The shade tolerant plants are known as– **Sciophytes**	Kerala PMT-2009
Thalamiflorae includes the orders– **Ranales, Parietales and Malvales**	Kerala PMT-2009
The plant of arid regions that modifies its stem into a flattened structure with chlorophyll pigments to carry out photosynthesis is– **Opuntia**	Kerala PMT-2012
The PEN (Primary Endosperm Nucleus) develops into endosperm event takes place after– **Double fertilization**	Kerala PMT-2012

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A taxon is observed Himgiri variety which is resistant to hill bunt disease belongs to this taxon. In this taxon, pollen grains lose viability within 30 minutes of their release from anthers. The taxon belongs to the order– **Poales**	**AP EAMCET-2014**
In angiosperms, lateral roots arise from– **Pericycle**	**BVP-2000**
Acacia arabica is a– **Xerophytes**	**BVP-2000**
In angiosperm, triple fusion is necessary for the formation of– **Endosperm**	**BHU PMT (Mains)-2006**
Ceratophyllum is a– **Rootless plant**	**AIIMS-2007**
The correct descending sequence with reference to the number of cohorts is– **Thalamiflorae, Calyciflorae, Disciflorae, Inferae**	**AP EAMCET-2008**
Vessels and companion cells are found in– **Angiosperm**	**JIPMER-2008**
A plant bears fruit, has a column of vascular tissue and a tap root system. The plant is a– **Angiosperm and dicot**	**AIPMT-1994**
Life process of plants and Alternation of Generation	
Male and female gametophytes do not have an independent free living existence in– **Angiosperms**	**NEET-2020 Phase-II**
In plant 'A', sporophyte is not free living, 'B' zygote represents short lived sporophyte, 'C' independent gametophyte and sporophytic generations. The organisms A, B and C are respectively– **Marchantia, Volvox, Lycopodium**	**AP EAMCET-28.04.2017 Shift-II**
Male cone and megasporophylls are borne on separate individual plants- **Cycas**	**AIIMS-2017**
Life cycle of Ectocarpus and Fucus respectively are– **Haplodiplontic, Diplontic**	**NEET-2017**
Isogamous condition with non-flagellated gametes is found in– **Spirogyra**	**NEET-2013**
Gametophyte is the dominant phase in the lifecycle of– **Riccia**	**Karnataka CET-2011**
Gametophyte and sporophyte are independent of each other in– **Pteridophytes**	**AIIMS-2010**
Elater mechanism for seed dispersal is exhibited by– **Marchantia**	**AIIMS-2014**
The plant body of moss (Funaria) is– **Predominantly gametophyte with sporophyte**	**AIIMS-2002**
Mosses and ferns are found in moist and shady places because both– **Require presence of water for fertilization**	**AIIMS-2004**
In *Ulothrix* meiosis takes place in– **Zygote**	**AIIMS-2004**
Physiological heterospory is seen in– **Selaginella**	**DUMET-2004**
Prothallus of the fern produces– **Gametes**	**VMMC-2009**
Calyptra develops from– **Venter wall of archegonium**	**VMMC-2009**
Development of gametophyte from sporophyte without formation of spores is called– **Apospory**	**J&K CET-2003**
The gametophyte generation is dominant in– **Bryophyte**	**Rajasthan PMT-1995**
An immature male gametophyte differs from a mature male gametophyte in that it– **Has not yet germinated and its generative cell has not divided into two male gamete**	**AMU-2014**
Ustilago has– **Haplontic life cycle**	**AIPMT-2009**
Flagellated male gametes are present in all the three of– **Riccia, Dryopteris and Cycas**	**AIPMT-2007**
A plant completing its life cycle before the onset of dry condition is said to be– **Drought escaping**	**AFMC-2000**
The branch of biology, which deals with the study of processes and functions of an organism, is called– **Physiology**	**BHU PMT-2004**
A typical foliage leaf comprises– **Mesopodium, hypopodium and epipodium**	**AMU-1996**
Sporangia bearing leaf is called– **Sporophyll**	**AMU-2002**
Cotton belonges to family– **Malvaceae**	**MGIMS Wardha-2003**
Masses of pollen grains, i.e., pollinia is found in– **Orchidaceae**	**JIPMER-2013**
Lady finger belongs to family– **Malvaceae**	**JIPMER-2013**
Insectivorous plant usually survive in– **N_2 deficient soil**	**JCECE-2005**
Clear cut alternation of generations in present in– **Aspidium**	**JIPMER-1995**
In plants, glycolate metabolism takes place in– **Low concentration of CO_2**	**VMMC-2005 AMU-2004**

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04.

ANIMAL KINGDOM

4.1 Classification

- The phenomenon of metagenesis occur in– **Obelia**
- Plane passing through the central axis of the body divides the organism into two identical halves, the organism is called– **Radially symmetrical**
- A fresh water sponge– **Spongilla**
- Diploblastic and triploblastic are terms that describe– **The number of germinal layers during embryonic development**
- Nervous system is present as nerve rings and nerve cords in– **Platyhelminthes**
- Pseudocoelomates animals are– **Aschelminthes**
- Radial symmetry occurs in– **Cnidaria**
- True coelom is lined by– **Mesoderm**
- In which phylum the body can be divided into identical left and right halves in only one plane– **Annelida**
- Organization in sponges is– **Cellular grade**
- Fresh water sponge is– **Spongilla lacustris**
- Skeleton of porifera is made up of– **Spongin fibres**
- In sponges, water enters through minute pores (ostia) in the body wall into a central cavity, spongocoel, from where it goes out through the osculum. This pathway of water transport is helpful in– **Food gathering, Removal of waste, Respiratory exchange**
- Gregarious pest is– **Locusta**
- Euspongia is commonly known as– **Bath sponge**
- Canal system is present in– **Sycon**

4.2 Coelenterata

- Meandrina (brain coral) belongs to phylum– **Coelenterata**
- Radial symmetry occurs in– **Coelenterata and Echinodermata**
- Marine and migrate to fresh water for spawning are - **Cyclostomes**
- Chelone is commonly known as– **Turtle**
- The features is common in scorpion, grasshopper and prawn– **Jointed appendages and chitinous exoskeleton**
- ..... common between earthworm and Periplaneta. **Both have segmented body**
- Completely non-parasitic form– **Sea anemone**
- The traits is not shared by both sea anemones and jelly fish– **A medusa as the dominant stage in the life cycle**
- Polyp phase is absent in– **Aurelia**
- Corals belong to phylum– **Cnidaria**
- Characteristic feature of coelenterata is– **Gastrovascular cavity**
- The Jelly fish is classified under the phylum– **Cnidaria**
- Bilateral symmetry does not occur in– **Obelia**
- Portugese man of war is– **Physalia**

4.3 Ctenophora

- Animals reproduces only by sexual means– **Ctenophora**
- ____ phylum are exclusively marine, radially symmetrical and diploblastic– **Ctenophora**
- Comb jellies belong to– **Ctenophora**
- In case of poriferans, the spongocoel is lined with flagellated cells called– **Choanocytes**
- A common characteristic of all vertebrates without exception is– **The presence of well-developed skull**
- The group of animals reproduces only by sexual means– **Ctenophora**
- Bioluminescence show– **Pleurobrachia**
- Fertilisation and development in Ctenophora is– **External, Indirect**
- A well marked feature in ctenophores– **Bioluminescence**
- Comb plates of ctenophores possess– **Cilia for locomotion**
- Ctenophores are exclusively marine organisms. They are radially symmetrical and diploblastic. These are commonly called– **Sea walnuts**

4.4 Platyhelminthes

- In amphibians, heart is ____ chambered– **Three**
- Heart is three-chambered in reptiles, except– **Crocodile**
- Flame cells present in platyhelminthes are specialized in– **Osmoregulation and excretion**
- Flame cells are main excretory structures of– **Platyhelminthes**
- Bilaterally symmetrical and acoelomate animals are exemplified by– **Platyhelminthes**
- High regeneration power is present in– **Planaria**
- Anus is absent in– **Fasciola**
- Alimentary canal is absent in– **Ascaris & Fasciola**
- Platyhelminthes are commonly called– **Flatworms**
- Some members of platyhelminthes absorb nutrients from the host directly through– **Body surface**

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- Examples of platyhelminthes includes– **Fasciola and Taenia**

4.5 Aschelminthes

- ..... Organisms bears hollow and pneumatic long bones– **Neophron**
- Well -developed alimentary canals and muscular pharynxes are present in– **Aschelminthes**
- Ascaris is characterized by– **Presence of neither true coelom nor metamerism**
- Aschelminthes are– **Free-living, Aquatic, Terrestrial or parasite**
- Fertilisation is internal in– **Aschelminthes**
- Common name of Ancylostoma is– **Hookworm**

4.6 Annelida

- ..... animals are true coelomates with bilateral symmetry– **Annelids**
- Segmentation in the body is first observed ..... phylums. **Annelida**
- Phylum Annelida belongs to– **Kingdom animalia**
- A feature of annelids is not– **Pseudocoelomate**
- Annelid has type of muscles for locomotion– **Longitudinal, Circular**
- Parapodia helps in– **Locomotion**
- Closed circulatory system is present in– **Annelida**
- The common name of Hirudinaria is– **Cattle leech**
- Double ventral nerve cord presents in– **Pheretima**
- Nephridia helps in– **Osmoregulation, Excretion**
- Monoecious examples of– **Leeches, Earthworm and liver fluke**
- Triplobastic, metamerically segmented and coelomate animals are found in– **Annelida**
- An example of dioecious is– **Nereis**
- Presence of metameres is a characteristic feature of– **Annelida and arthropoda**

4.7 Arthropoda

- Common features in silverfish, scorpion, dragonfly and prawn is– **Jointed appendages and chitinous exoskeleton**
- In phylum arthropoda, excretion takes place through– **Malpighian tubules**
- _____ possesses poison sting and belongs to class chondrichthyes– **Trygon**
- Animals belongs to the same phylum arthropoda– **Prawn, Scorpion, Locusta**
- Animals like annelids, arthropods, etc. where the body can be divided into identical left and right halves in only one plane, exhibit _____ symmetry– **Bilateral**
- Changes that allow the conversion of larva into adult is called– **Metamorphosis**
- Exoskeleton, metameric segmentation and jointed appendages is characterized by - **Arthropoda**
- Dengue fever is spread by– **Aedes**
- Mature larva of housefly is– **Maggot**
- The component unit of compound eye insects is called– **Ommatidia**
- Animal is cold blooded and has 4-chambered heart– **Crocodile**
- Salpa and Doliolum belong to– **Tunicata**
- A limbless amphibian is– **Ichthyophis**
- Flexible body of euglenoids is due to the presence of– **Proteinaceous pellicle**
- Casual organisms of sleeping sickness and kala-azar belong to– **Flagellated protozoans**
- A ciliated protozoan is– **Paramecium Caudatum**
- Reproduction is synonyms with growth i.e, increase in number of cell- **Chlamydomonas and Amoeba**
- Exoskeleton of arthropods is composed of– **Chitin**
- ..... features is not present in the Phylum Arthropoda– **Parapodia**
- The characters is absent in all chordates except mammals– **Mammary glands**
- Exclusive character of Class Mammalia is– **Presence of a muscular diaphragm**
- Bilateral symmetry, segmentation, coelom and open circulatory system characterises, phyla is– **Arthropoda**
- ..... is common among crab and honeybee– **Jointed legs**
- Lateral appendages in Annelida are– **Parapodia**
- Phylum Mollusca can be distinguished from other invertebrates by the presence of– **A mantle and non-segmented body**
- Examples of Phylum Arthropoda is– **Cockroach, scorpion, prawn**
- The animal ..... has bilateral symmetry. **Cockroach (Arthropoda), Roundworm (Aschelminthes), Planaria (Platyhelminthes)**
- Belongs to the same phylum is– **Prawn, Scorpion, Locust**
- Respiratory organs of Arthropods are– **Gills, Book-gills, Book-lungs and tracheae**
- Largest number of species are trace in – **Arthropoda**
- Exoskeleton of Arthropods is formed by– **Chitin**
- An economically important insect is– **Silkworm and apis**
- Invertebrates with jointed-legs are included in Phylum– **Arthropoda**
- Excretory organs of arthropods are– **Malpighian tubules**
- In arthropods the balancing organ is– **Statocyst**
- Silver fish, scorpion, crab and honey bee is common among– **Jointed appendages**

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4.8 Mollusca

- In ctenophora, the body bears _____ external rows of ciliated comb plates, help in locomotion– **Eight**
- A file like rasping organ for feeding, called radula, present in the phylum _____– **Mollusca**
- In amphibians, respiration occurs through– **Gills, Lungs and Skin**
- Pairs of animals comprises jawless fishes– **Lampreys and Hag fishes**
- _____ is responsible for maintaining the current of water in sponge– **Choanocytes**
- Aquatic annelids (like Nereis) possess lateral appendages called _____, which help in swimming– **Parapodia**
- _____ possesses electric organs and belongs to class chondrichthyes– **Torpedo**
- Few cnidarians like corals have a skeleton composed of– **Calcium carbonate**
- _____ is universal for sponges– **High regenerative power**
- Correct combination of aquatic mammals is– **Whales, Dolphins, Seals**
- Body cavity is the cavity present between body wall and gut wall. In some animals the body cavity is not lined by mesoderm. Such animals are called– **Pseudocoelomate**
- ..... pairs of animals has non-glandular skin– **Chameleon and Turtle**
- In some animal groups, the body is found divided into compartments with serial repetition of at least some organs. This characteristic feature is called– **Metamerism**
- Phylum and its three examples is– **Mollusca - Loligo, Sepia, Octopus**
- "Pearl Oyster" is commonly called– **Pinctada**
- Organisms ..... is a completely non-parasitic form. **Sea anemone**
- Stinging capsules (nematocysts) are found in– **Sea pen and sea fan**
- A soft and spongy layer of skin forms a mantle over the visceral hump in– **Molluscs**
- Octopus is commonly called as– **Devil fish**
- Mollusca is not a– ***Labeo rohita***
- Second largest phylum is– **Molluscs**
- Phylum molluscs can be distinuished from other invetebrates by the presence of– **A mantle & unsegmented body**
- System in mollusca opens into mantle cavity– **Respiratory, Excretory system**
- Radula is a– **Rasping organ**
- Squid, cuttlefish and Octopus belong to the phylum– **Mollusca**
- Sea -hare is the common name of– **Aplysia**
- The space between the hump and the mantle is called– **Mantle cavity**
- Members of phylum Mollusca is– **Bilaterally symmetrical, Triploblastic**
- Feather like gills are present in– **Mantle cavity**
- Head, foot & visceral mass– this combination of characters is a diagnostic feature of– **Molluscs**
- Sepia is commonly known as– **Cuttle fish**
- In Mollusca sensory tentacles are present in- **Anterior gead region**

4.9 Echinodermata

- An enterocoelomate invertebrate group is– **Echinodermata**
- Coelom produced by splitting of mesoderm is– **Schizocoel**
- True coelom is cavity between alimentary canal and body wall enclosed by– **Mesoderm on both sides**
- Water-vascular system is present in– **Asterias**
- The development in echinodermata is– **Indirect**
- Redial symmetrical adult and bilateral symmetrical larva has– **Echinodermata**
- Exoskeleton of echinoderms is– **Calcareous**
- Echinoderms are– **Exclusively marine**

4.10 Hemichordata

- Excretory organ like proboscis gland is present in– **Hemichordata**
- Characteristic cells of Hydra are– **Cnidoblasts**
- Polyp phase is absent in– **Aurelia**
- Excretory organ of hemichordata is– **Proboscis gland**
- Proboscis gland is an excretory organ in– **Hemichordata**
- Hemichordates have now been placed with the non-chordates close to echinoderms, because– **Notochord is absent**
- Hemichordata was earlier considered as a subphylum under phylum– **Chordata**
- Balanoglossus belong to the phylum– **Hemichordata**

4.11 Chordata

- Features distinguish mammals from other vertebrates– **Hairy skin and mammary glands**
- Crocodile and penguin are similar to Whale and Dogfish– **Have gill slits at some stage**
- The scientific name of Ostrich– **Struthios**
- The exclusive feature of the birds– **Presence of feathers**
- In chordates during embryonic development the notochord is– **Mesodermal and ventral to nerve cord**
- Oviparous mammal– **Ornithorhynchus**
- ..... characteristics is not shared by birds and mammals– **Viviparity**
- The vertebrate group of animals characterised by crop and gizzard in its digestive system– **Aves**

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- Birds and mammals share one of the characteristics as a common feature– **Warm blooded**
- ..... one of the sets of animals belong to a single taxonomic group– **Monkey, Chimpanzee, Man**
- Oviparous is– **Platypus**
- Poisonous snake is not a– **Python**
- ..... can differentiate to perform different functions in some animals– **Interstitial cells**
- The sets of animals share a four chambered heart– **Crocodiles, Birds, Mammals**
- Crocodile and penguin are similar to whale and dogfish in which one of the features– **Have gill slits at some stage**
- Groups of animals are coelomates are– **Reptiles, birds, insects**
- Amphibians share with reptiles all of the characters except– **External fertilisation and indirect development**
- The flightless bird is– **Struthio**
- The characters does not fit for Class Aves– **Beak is absent in them**
- Homeotherm is not a– **Testudo**
- Examples of subphylum Urochordata is– **Ascidia, Salpa, Doliolum**
- In class Amphibia, respiration occurs through– **Gills, Lungs, Skin**
- Poisonous snake is– ***Naja - Naja* (cobra), Bangarus (Krait), Vipera (Viper)**
- After spawning, within a few days, they die– **Petromyzon**
- Poison sting belongs to class chondrichthyes– **Trygon**
- Insects is living fossil– **Limulus**
- Air bladder is present in– **Bony fishes**
- Tympanum is not present in– **Snakes**
- Sets of animals does all the four-give birth to young ones– **Kangaroo, Dolphin, loris hedgehog**
- Animals belonging to phylum Chordata are fundamentally characterized by the presence of– **Notochord, Dorsal hollow nerve cord, Paired pharyngeal gill slits**
- Structure present in all adult vertebrates– **Dorsal tubular nerve cord**
- Cold blooded animal is– **Great white Shark**
- Placoid scales are found in– **Scoliodon**
- One of the primary character of chordates is– **Dorsal tubular nerve cord**
- Salamandra is– **an amphibian**
- The heart is 3 or 4 chambered in the vertebrate group– **Reptilia**
- An oviparous animal is– **Pigeon**
- Limbless amphibian is– **Ichthyophis**
- Identify the aquatic mammals from the following– **Balaenoptera, Delphinus**
- In presence of bone air cavity filled with air of birds– **Reduce body weight**
- Amphibians share with reptiles except characters– **External fertilization and indirect development**
- Crocodile and penguin are similar to whale and dog fish feature– **Have gill slits at some stage**
- Post anal tail occurs in– **Chordates**
- Subphyla Urochordata and Cephalochordata are often referred to as– **Protochordates**
- An egg-laying mammal is– **Ornithorhynchus**
- Ear pinna is found in– **Mammals**
- The body is devoid of scales and paired fins in– **Cyclostomata**
- Exoskeleton, a characteristic feature of reptilia, is absents in– **Amphibians**
- In Osteichthyes, pairs of gills are present– **4**

4.12 Miscellaneous

- Feature of bony fish is missing in cartilaginous fishes– **Operculum**
- _____ phylum are mostly marine and asymmetrical– **Porifera**
- _____ phylum represent cellular level of organization– **Porifera**
- In some animal groups, the body is found divided into compartments with at least some organs. This characteristic feature is called– **Metamerism**
- Types of cells present in some animals can differentiate to perform different functions is– **Interstitial cells**
- The sets of animals share a four chambered heart– **Crocodiles, Birds, Mammals**
- Birds and mammals share one of the following characteristics as a common feature– **Warm blooded nature**
- The body cavity is the cavity present between body wall and gut wall. In some animals, the body cavity is not lined by mesoderm. Such animals are called– **Pseudocoelomate**
- Digestive tract has additional chambers like crop and gizzard, that animals is– **Pavo, Psittacula, Corvus**
- Characteristic features of phylum Annelida is – **Triploblastic, segmented body and bilaterally symmetrical**
- All vertebrates are chordates but all chordates are not vertebrates, because– **Notochord is replaced by vertebral column in adult of some chordates**
- Animals does not undergo metamorphosis– **Grasshoppers and Earthworm**
- Vertebrate group of animals characterised by crop and gizzard in its digestive system– **Aves**

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EXAM POINT

Basis of Classification	
Among triplolastic animals, these are asymmetrical– **Adult gastropods**	TS EAMCET-10.05.2023, Shift-II
The cleavage pattern in Deuterostomia is– **Radial and indeterminate**	TS EAMCET 10.05.2023 Shift-I
Slowest and most primitive type of locomotion in Protozoan is– **Amoeboid locomotion**	AP EAPCET-22.05.2023, Shift-I
Number of vertebrae that from the sacrum– **5**	TS EAMCET-11.05.2023, Shift-II
Among vertebrates, renal portal system is absent in– **Myxine, Macropus, Felis**	TS EAMCET-11.05.2023, Shift-II
All protostomes show– **Holoblastic, spiral, determinate cleavage**	TS EAMCET-11.05.2023, Shift-I
Hemozoin is– **Insoluble, crystalline substance released during malarial parasite infection**	AP EAPCET-23.05.2023, Shift-I
The set of characters equally shared by reptiles and aves– **Interclavicle, uricotelism and megalecithal eggs**	AP EAPCET-23.05.2023, Shift-I
The lowest level of organization among eumetazoans is– **Tissue level**	TS EAMCET-30.07.2022 Shift-I
The animals which are active during day time– **Diurnal**	Karnataka CET-2022
Multicellular animals that exhibit cellular level organisation are– **Parazoans**	TS EAMCET-30.07.2022 Shift-II
Schizocoelomates & enterocoelomates groups constitutes– **Eucoelomates**	AP EAMCET-12.07.2022 Shift-II
The Scientific name of Rhesus monkey– **Macaca mulatta**	AP EAPCET-12.07.2022 Shift-I
Libbie Henrietta Hyman scientist is regarded as the pioneer in the field of– **Systematic of invertebrates**	AP EAPCET-11.07.2022 Shift-I
Principal type of symmetry in triploblastic animals– **Bilateral**	TS EAMCET-09.08.2021 Shift-II
Cold blooded animals fall under the category of– **Ectotherms**	AP EAPCET-07.09.2021 Shift-I DUMET-2010
Coelomate animal in which blastopore develops into anus is called– **Deuterostomia**	CMC Vellore-2010, 2015 AP EAPCET-07.09.2021 Shift-I
Cells → Tissues → Organs → Systems is the correct structural organization of any– **Animal**	MHT CET 5.10.2020 Shift-I
The Coelom was coined by– **Haeckel**	AP EAMCET-25.09.2020 Shift-I
Bilaterally symmetrical and acoelomate animals are exemplified by– **Platyhelminthes**	NEET-2020 Phase-I
Nematoda phyla is a– **Pseudocoelomate**	KVPY SB & SX-2019
Animals living in air-water interface– **Neuston**	AP EAMCET-25.04.2018 Shift-I
Earthworm animals does not undergo– **Metamorphosis**	NEET-2018
Taenia solium is an– **Acoelomate**	TS EAMCET-03.05.2018 Shift-I
Mackerel edible fishes is a marine fish having rich source of– **Omega-3 fatty acids**	NEET-2016 Phase-II
A coelom (body cavity) derived from blastocoel is known as– **Pseudocoelom**	UP CPMT-2013 Uttarakhand PMT-2010
Body cavity lined by mesoderm is– **Coelom**	J&K CET- 2005, 2002
Ventral nerve cord is common to leech– **Cockroach and scorpion**	Assam CEE-2014
The lower Jaw of a mammal is made up of– **Dentary**	BVP-2001
diseases is caused by a– **Protozoan**	AIPMT (Re-Exam)-2015
Biradial symmetry and lack of cnidoblasts are the characteristics of– **Ctenoplana and Beroe**	AIPMT-2006 CMC Vellore-2012, JCECE-2013
Periplaneta has an open– **Circulatory system**	AIPMT-2006
Metameric segmentation is the characteristic of– **Annelida and Arthropoda**	AIPMT-2006
Schizocoelomates and enterocoelomates are– **True coelomates**	AIIMS-2015 / JIPMER-2011 / JCECE-2007
Posterior sucker in Hirudinaria assists in– **Locomotion**	AIPMT-1993
Radial symmetry is, usually, exhibited in animals which– **are attached to the substratum**	AIPMT-1995, 1994 AIIMS-1996
Vivipary is found in– **Rabbit**	Punjab MET-2006
Pseudocoel is present in– **Ascaris**	Punjab MET-2006
Radial symmetry is found in– **Starfish**	Punjab MET-2006

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Cnidoblasts is not found in– **Vertebrates**	CG PMT-2005
Radial cleavage, blastopore becoming anus are the characteristics of– **Deuterosome**	DUMET-2002
The general body plan and body symmetry are similar in– **Frog and locusts**	Punjab MET-2011
Solenocytes and nephridia are respectively found in– **Platyhelminth and Annelids**	JCECE-2003 Rajasthan PMT-2002
The body of the animal can be divided into identical halves in only one plane is– **Bilateral symmetry**	J&K CET-2010
Changes that allow the conversion of larva into adult, is called– **Metamorphosis**	CG PMT-2008
Microlecithal eggs are present in– **Mammals**	MGIMS Wardha-2012
Animals which have well-marked digestive cavity are put under– **Enterozoa**	CMC Vellore-2011 BVP-2011
The most recently discovered animal phylum is– **Loricifera**	J&K CET-2011
The aquatic organism that can actively swim at will against the water current is– **Nekton**	J&K CET-2011
Study of behavior of animals called– **Ethology**	AMU-2009
Animals like cockroach, lizards and mice share buildings to human dwelling such animals are– **Inquilines**	AMU-2011
Formation of sperms from small clumps of cells is not a case of– **Epimorphosis**	CMC Vellore-2013 Rajasthan PMT-2009 UP CPMT-2004
Root cap is absent in– **Hydrophytes**	Rajasthan PMT-2006
Spiral cleavage is found in– **Annelids, nemertines and mollusca**	Haryana PMT-2011
Animals active at night are– **Nocturnal**	BCECE-2004, 2009
Animals which possess cleidoic eggs exhibit– **Internal fertilization and external development**	Karnataka CET-2011
The plane that divides the body into right and left halves– **Sagittal**	AP EAMCET-2010
In coelomates the problem of diffusion of food from gut to tissues is solved by– **Developing a circulatory system**	AP EAMCET-2009
Cleidoic eggs are found in– **Few reptiles**	AFMC-2011
In sharks, one of the following is absent– **Air bladder**	J&K CET-2008
An acoelomate animal with bilateral symmetry is– **Liver fluke**	DUMET-2008
Fly, mosquitoes and cockroach similarity between them is– **All belong to class Insecta**	AFMC-2002
Heart lacks sinus venosus in– **Mammals**	AFMC-2002
The movement seen in the trichoid joint is– **Rotator around a central axis**	AP EAMCET-2004
Myogeneic heart is characteristic feature of– **Mollusca and other vertebrates like man**	VMMC-2014
The group amniota includes– **reptiles, birds and mammals**	Manipal-2013
Coelom is lined on all sides by– **Mesoderm**	J&K CET-2015
All flatworms differ from all round worms in having– **Solid mesoderm**	DUMET-2009
Coelom derived from blastocoel is known as– **Pseudocoelom**	DUMET-2001
Sinus venosus is present in– **Fishes, amphibians and reptiles**	DUMET-2001
Pheretima has a– **True coelom**	J&K CET-2007
Hookworm organisms is– **Pseudocoelomate**	Rajasthan PMT-2011 DUMET -2002
Book lungs are the respiratory organs in– **Arthropods**	Rajasthan PMT-2006,2004
Torsion and detorsion are exceptional to– **Mollusca**	CMC Ludhiana-2011
Porifera	
Archaeocytes cell type is capable of giving rise to other cell types in– **Sponges**	VMMC-2012, JIMPER-2009 MGIMS Wardha-2008 UP CPMT-2012, 2008 Rajasthan PMT-2008 CG PMT-2008 Punjab MET-2004 DUMET-2001, Manipal-2000 AIIMS-1994

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During unfavourable conditions, the sponges form– **Gemmule**	**AP EAMCET-2011 MGIMS Wardha-2010 JIPMER-2010 / BVP-2008 Uttarakhand PMT-2007**
Canal system is present in phylum– **Porifera**	**HP CET-2018 Rajasthan PMT-2011, 2004**
The excretory material of bony fish is– **Ammonia**	**VMMC-2012 Uttarakhand PMT-2008 CG PMT-2008 MGIMS Wardha-2006 DUMET-2001**
In case of poriferans the spongocoel is lined with flagellated cells called– **Choanocytes**	**NEET-2017 / AMU-2005 Manipal-2004 Uttarakhand PMT-2004**
The correct statements in relation to Wucheraria– **Pineal spicules are unequal and chitinous**	**AP EAPCET-23.05.2023, Shift-II**
Sponges that contain calcareous spicules and live in shallow marine waters are included under the class– **Calcarea**	**AP EAMCET-12.07.2022 Shift-II**
Body supported by chitin is not a characteristic feature of– **Sponges**	**AP EAPCET-07.09.2021 Shift-I**
A sponge harmful to oyster industry is– **Cliona**	**AP EAMCET-24.09.2020 Shift-I MGIMS Wardha-2008**
The outer chitinous layer of the gemmule of a sponge is secreted by– **Amoebocytes**	**MHT CET-08.10.2020 Shift-I**
In most simple type of canal system of porifera, water flows through– **Ostia→ Spongocoel→ Osculum→Exterior**	**WB JEE-2012**
The phenomenon of regeneration in sponges was observed and explained by– **H.W. Wilson**	**Uttarakhand PMT-2006**
Power of regeneration of sponges is due to– **Archaeocytes**	**AIIMS-2000**
Body having meshwork of cells, internal cavities lined with food filtering flagellated cells and indirect development are the characteristics of phylum– **Porifera**	**AIPMT (Re-Exam)-2015**
Collar cells are characteristic of– **Sponges**	**UP CPMT-2009**
Leucosolenia and Spongilla have porous body and are– **Diploblastic**	**AIIMS-2010**
The range of length of sponges is– **1 cm-1 metre**	**BCECE-2015**
Proterion is an example of– **Porifera**	**BCECE-2015**
Presence of spongocoel features is universally present in all– **Sponges**	**MP PMT-2013**
One animal that does not perform locomotion is– **Sycon**	**JIPMER-2011**
The canal system is a characteristic feature of– **Sponges**	**JIPMER-2011 Punjab MET-2010 BCECE-2012**
Members of phylum Porifera are– **mostly marine animals but few are fresh water animals**	**HP CET-2012 VMMC-2004**
Larva of Sycon is– **Amphiblastula**	**Rajasthan PMT-2005 AFMC-2001**
Choanocyte is the characteristic feature of– **Sponges**	**UP CPMT-2011 Rajasthan PMT-2005 UP CPMT-2002**
The four of Spongilla, Leech, Dolphin and Penguin about all correct statement is– **Spongilla has special collared cells called choanocytes, not found in the remaining three**	**AIPMT (Screening)-2010**
When bath sponges dries up is left– **Spongin fibres**	**JIPMER-2004**
Spicule, made up of silica are found in– **Hyalonema**	**UP CPMT-2014, VMMC-2014 AP EAMCET-2001**
Sycon animal can successfully reproduce without utilizing the process of– **Mitosis**	**Karnataka CET-2006**
Cells absent in sponges is type of– **Cnidocytes**	**JIPMER-2014 UP CPMT-2006, AMU-2006**
Locomotion does not occur in– **Leucosolenia**	**CG PMT-2011**
Porifera animal phyla possesses– **Spicule**	**WB JEE-2012**

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Collar cells are useful for feeding in–	**Sponges**	**Manipal-2012, AFMC-2002 AP EAMCET-1997**
Tornaria is not a larva of–	**Sponge**	**Manipal-2011**
Choanocytes are also known as–	**Collar cells**	**Manipal-2004, AMU-2005 Uttarakhand PMT-2004**
Air bladder is present in–	**Actinopterygii**	**DUMET-2010**
Fresh water bony fish survives by–	**get rid of H_2O and gain salt**	**DUMET-2008**
Placoid of scales are found in–	**Chondrichthyes**	**UP CPMT-2012**
The commercial bath sponges belongs to–	**Porifera**	**JIPMER-1999**
Gambusia fish selectively feeds on the larva at–	**Mosquito**	**BHU PMT (Screening)-2010 BVP-2008**
The pH of the avian blood is maintained by–	**HCO_3^-**	**KVPY SA-2016**
Food storage in Leucosolenia occur by–	**Thesocyte**	**MGIMS Wardha-2005**
Sponges are–	**Sessile**	**VMMC-2005, AMU-2004 BCECE-2006**
Porifera is a side line in the process of–	**Evolution**	**AMU-2011**
Branch of zoology dealing with the study of fishes is called–	**Ichthyology**	**Uttarakhand PMT-2009**
The type of canal system found in Leucosolenia is–	**Ascon type**	**UP CPMT-2001**
A metazoa without tissue organisation is called–	**Parazoa**	**Manipal-2000**
Choanocytes cells are found only in–	**Sponges**	**Haryana PMT-2005**
Water vascular system is characteristic of–	**Echinodermata**	**CG PMT-2009**
A sponge differs from all other matazoans in having–	**numerous mouthlets and one exit**	**JIPMER-2000**
Spongilla is a fresh water–	**Sponge**	**JIPMER-2000**
Sponges have evolved from–	**Choanoflagellates**	**Manipal-2013**
Heterocercal tail is found in–	**Cartilaginous fishes**	**VMMC-2011, 2007 UP CPMT-2010 J&K CET-2006**
Swim bladder is present in–	**Bony fishes**	**AMU-2005, Manipal-2003**
Torpedo is commonly known as–	**Electric ray**	**VMMC-2005, AMU-2004**
Porifera is the only phylum in the animal kingdom without any–	**Nerve cell**	**AMU-2012**
Digestion in Leucosolenia and other sponges is–	**Intracellular**	**MGIMS Wardha-2011**
Sponges have originated from–	**Choanoflagellate protozoans**	**BHU PMT (Screening)-2011**
Hydra can paralyse prey by–	**Nematocysts**	**BHU PMT (Screening)-2011**
Gambusia is a–	**Viviparous fish**	**DUMET-2009**
Ampullae of Lorenzini are present in–	**Fish**	**DUMET-2009**
An example of Scyphozoa is–	**Jelly fish**	**AP EAMCET-2011, 2000**
An example for the group which is considered as blind alley in animal kingdom is–	**Chalina**	**AP EAMCET-2000**
Animals devoid of respiratory, excretory and circulatory organs are–	**Sponges**	**CMC Ludhiana-2010**
Bath sponges are formed from–	**Dried spongin fibre skeleton**	**Haryana PMT-2011**
Flying fish is–	**Exocoetus**	**AMU-2002**
Salmon fishes are also known as–	**Trout**	**AMU-2002**
Hydra does not perform locomotion by–	**Jet propulsion**	**VMMC-2003**
Coelenterata (Cnidaria)		
Physalia sp. animals is called–	**Portuguese man-of-war**	**Tripura JEE-2017, BVP-2008 Uttarakhand PMT-2007 BVP-2005, Haryana PMT-2004**
Polyp phase is absent in–	**Aurelia**	**VMMC-2012, JIPMER-2009 UP CPMT-2008 Rajasthan PMT-2008 CG PMT-2008**
In sea anemone, the symmetry is–	**Radial**	**Manipal-2010 / AMU-2009 JIPMER-2008 / J&K CET-2007 CMC Ludhiana-2007 UP CPMT-2004 MGIMS Wardha-2004**

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Characterisitc of coelenterata is occurrence of– **Nematocysts**	VMMC-2010 / AMU-2008 AP EAMCET-2005 UP CPMT-2001
The characteristic larva of phylum- 'Coelenterate' is– **Planula**	VMMC-2012 / JIPMER-2009 MGIMS Wardha-2008 UP CPMT- 2008
Hydra recognises its prey by– **Nematocyst**	BVP-2001 / AIIMS-1996 Manipal-2001 /VMMC-2004
Stinging capsules (nematocysts) are found in– **Sea pen and sea fan**	AIIMS-2013/ JIPMER-2006 UP CPMT-2005, 2003
Digestion is both extracellular and intracellular in– **Cnidaria**	AP EAPCET-12.07.2022 Shift-I
The symmetry of Aurelia is– **Radial**	TS EAMCET-31.07.2022 Shift-I
The most primitive and the slowest type of locomotion in protozoans– **Amoeboid locomotion**	AP EAMCET-12.07.2022 Shift-II
Nocturunal periodicity is exhibited by– **Sheathed microfilaria larvae of Wucheraria**	TS EAMCET-09.05.2019 Shift-I TS EAMCET-30.07.2022 Shift-II
Lasso is a structure found in– **Nematoblasts**	AP EAPCET-07.09.2021 Shift-I
The symmetry of medusa is– **Radial**	JIPMER-2018
Comb-plate is the characteristic feature of– **Ctenophora**	Tripura JEE-2017
In which animal nerve cell is present but brain is absent– **Hydra**	Rajasthan PMT-2007 AIPMT-2002, BVP-2002
Silverfish is not a– **Cnidarian**	Uttarakhand PMT-2011
The true statement regarding corals is– **form branch colonies, solitary or colonial and grow as massive bodies**	AIIMS-1999
Penetrant, valvent and glutinant are type of– **Nematocyst of Hydra**	CMC Vellore-2013
The type of asexual reproduction found in Hydra is– **Budding**	Kerala PMT-2009
Coral reef formation is mainly related to– **Anthozoans**	AMU-1995
The poisonous fluid present in nematocysts of Hydra is– **Hypnotoxin**	AMU-2006 / AIIMS-2000
Metagenesis refers to– **Alternation of generation between asexual and sexual phases of an organism**	AIPMT (Re-Exam)-2015
The Taxon mentioned that represents both marine and fresh water species is– **Cnidaria**	AIPMT-2014
Sea- fan (Gorgonia) living organisms completely lacks a– **Cell wall**	AIPMT-2014 MGIMS Wardha-2003
Planaria posses high capacity of– **Regeneration**	AIPMT-2014
Absence of circulatory system in Hydra is compensated by– **Gastrovascular cavity**	UP CPMT-2007
Regeneration in Hydra will be faster if it is cut off from– **Tentacles**	UP CPMT-2007
Choanocytes is not applicable to– **Coelenterate**	AIIMS-1996
Hydra receives impulses and stimuli through– **Sensory cells**	AIIMS-2002
It is ejected on contact and pierce the prey is correct about nematocyst in– **Hydra**	AIIMS-2001
Jelly fish belongs to class– **Scyphozoa**	AIPMT-1989
Hydra animals possesses nerve cells but– **No nerves**	AIPMT-1993
One of the special characters of coelenterata only is the occurrence of– **Nematocysts**	AIPMT-1994
Symmetry in Cnidaria is– **Radial**	Punjab MET-2008, JCECE-2012
Portuguese man of war is– **A coelenterate**	JIPMER-1996
It employs both intracellular and extracellular digestion– **Hydra**	BCECE-2015
Beroe is not a– **Cnidarian**	BCECE-2015
The typhlosole in earthworm is related with– **Absorption**	WB JEE-2007
Blind sac body plan is shown by– **Coelenterates**	WB JEE-2007
One of the characteristic of Hydra is– **Predation**	Punjab MET-2006 Rajasthan PMT-2002 JCECE-2003
Female reproductive organ of Ascaris are– **Didelphic**	Rajasthan PMT-1999
Hydra is– **diplobalstic, radial symmetrical and acoelomate**	Rajasthan PMT-1999, 1995
Hydra does not perform locomotion by– **Jet propulsion**	Haryana PMT-2001

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Hydra can paralyse prey-toy–	**Nematocysts**	**J&K CET-2001**
Sperms of Hydra formed from–	**Interstitial cells**	**Rajasthan PMT-1995**
Polyp stage is not present in–	**Calcarea**	**Rajasthan PMT-1995**
You are examining a water sample from a pond which is full of water plants. You find an animal which is cylindrical and shows a long filamentous structure at one end. It is not stationary and shows variety of movements. It could–	**Hydra**	**Rajasthan PMT-2001**
Sea pen is a–	**Coelenterate**	**Rajasthan PMT-2001**
Ctenophora shows affinities with–	**Cnidaria**	**JCECE-2003**
Coral reefs are formed by–	**Coelenterates**	**BVP-2011**
Physalia, Termite and Trypanosoma shows–	**Polymorphism**	**BVP-2009**
The diameter of stenotypes is–	**16 microns**	**Rajasthan PMT-2000**
Linnaeus scientist coined the name–	**Hydra**	**Rajasthan PMT-2000**
Corallium possess a hard exoskeleton formed by–	**Calcium carbonate**	**AP EAMCET-2007**
Choanocyte is not found in–	**Hydra**	**MGIMS Wardha-2004 UP CPMT-2004**
'Ephyra' is the stage in the life cycle of–	**Aurelia**	**AFMC-2000**
Sea anemone belong to phylum–	**Coelenterata**	**BCECE-2005**
The relation between Zoochlorella and Hydra is known as–	**Endozoic**	**Rajasthan PMT-1996**
Mesoglea of Hydra is chemically–	**Mucopolysaccharide**	**Rajasthan PMT-1996**
Main characteristics of Cnidaria is–	**Diploblastic,radial symmetry and cnidoblast cells**	**Rajasthan PMT-1996**
Bud develops in an adult Hydra in–	**2-4 days**	**Rajasthan PMT-1996**
Hydra is known for its–	**Regeneration power**	**UP CPMT-2010**
Highest degree of polymorphism is found in–	**Cnidaria**	**Uttarakhand PMT-2009 J&K CET-2008**
Characteristic cells of Hydra are–	**Cnidoblasts**	**DUMET-2008**
Interstitial cells are totipotent cells in–	**Hydra**	**AFMC-2002**
Siphonophora is the order in–	**Cnidaria**	**J&K CET-2009**
In Hydra, waste material of food digestion and nitrogenous waste material are removed from–	**Mouth and body wall**	**BHU PMT (Screening)-2010**
Physalia animals has a–	**Tetramorphic colony**	**MGIMS Wardha-2013**
Gonads of Obelia occur in–	**Radial canals of medusa**	**CMC Ludhiana-2008 AMU-2007**
Fungia belongs to–	**Anthozoa**	**JIPMER-2001**
If Hydra is cut transversely in three equal parts then–	**Regeneration will occur in all the three parts**	**J&K CET-2006**
Jelly fish has–	**No skeleton**	**JIPMER-1995**
Number of tentacles in Hydra is–	**Six to ten**	**Haryana PMT-1999**
Mesogloea is found in–	**Hydra**	**Haryana PMT-1999**
The cnidoblasts used during looping movement of Hydra are–	**Atrichous isorrhiza**	**AP EAMCET-2000**
Nematoblast of hydra are–	**Sensory**	**Rajasthan PMT-2006**
type of reproduction is found in–	**Hydra**	**Rajasthan PMT-2000**
Hydra belongs to–	**Radially symmetrical and acoelomate**	**Rajasthan PMT-2000**
Silver fish is a–	**Insect**	**BCECE-2002**
Corals are–	**most rich fauna**	**Haryana PMT-2011**

Ctenophora

Haemocoel is found in–	**Cockroach and Pila**	**BCECE-2014 , UP CPMT-2011 BVP-2007 MGIMS Wardha-2006**
Heart in fishes is described as–	**Myogenic, bronchial and venous heart**	**AP EAPCET-12.07.2022 Shift-I**
Larvae of Ascaris undergo second moulting in–	**Alveoli of lungs of man**	**TS EAMCET-31.07.2022 Shift-I**
Function of comb plates of Ctenophores is–	**Locomotion**	**TS EAMCET-09.08.2021 Shift-II**
Cyclostomata vertebrates are–	**Jawless**	**TS EAMCET-12.05.2017**
Comb jelly is member of phylum–	**Ctenophora**	**MGIMS Wardha-2012 Rajasthan PMT-1999**

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groups of animals reproduces only by– **Sexual means**	NEET (Karnataka)-2013
Treponema pallidum pathogen is a cause of– **Syphilis**	JIPMER-2016
Nematoblasts are formed by– **Interstitial cells**	Rajasthan PMT-2004
Comb plates are found in– **Pleurobrachia**	J&K CET-2008
Noctiluca shows– **Bio-luminescence**	Haryana PMT-2005
Egg, total cleavage is possible in type of– **Oligolecithal**	BCECE-2011
Angiosperms and Gymnosperms are grouped under– **Phanerogams**	UP CPMT-2008
The group of Anamniota includes– **Fishes and amphibians**	UP CPMT-2008 Uttarakhand PMT-2008
Animals having a built in thermostate to maintain constant body temperature are known as– **Homeothermic**	UP CPMT-2008
When an animal has both sexes (male and female), it is called– **Gynandromorph**	BCECE-2007
Coelom in cockroach is– **Restricted to gonads**	AP EAMCET-2001
Eusthenopteron connects– **Fishes and amphibians**	CMC Vellore-2013
Body cavity of Hydra is called– **Coelenterons**	J&K CET-2003
The body of Rohu fish is covered by– **Cycloid scale, but the tail of homocercal**	WB JEE-2014
An example of endomycorrhiza is– **Glomus**	AIPMT (Mains)-2010
Genetic map is one that– **Establishes sites of the genes on a chromosome**	MGIMS Wardha-2010
Sea horse belongs to– **Pisces**	UP CPMT-2003
Torpedo fish has an– **Electric organ**	Uttarakhand PMT-2007
Isinglass is prepared from– **Fishes**	AFMC -2011
Platyhelminthes	
Coelom is absent in– **Platyhelminthes triploblastic animal**	APEAMCET-2021 VMMC-2011 WB JEE-2011, 2008 Uttarakhand-2005
Flame cells are present in– **Platyhelminthes**	JIPMER-2019/ AIIMS-2019 AMU-2008 /AIPMT-1991
Secondary host of Schistosoma is– **Snail**	UP- CPMT -2012, 2008, 2003 VMMC-2012 Punjab MET-2011 BCECE-2010, DUMET-2005
Turbellarians are free living– **Planarians**	UP CPMT-2012, VMMC-2012 JIPMER-2009 UP CPMT-2012
Rostellar hooks are absent is true about– **Taenia saginata**	AMU-2005 / UKPMT-2004 Manipal-2004 / AIPMT-1993
The alternate host of Taenia saginata is– **Cow**	BVP-2005 / AMU-2005 Haryana PMT-2004 Manipal-2003
Flame cells present in the members of platyhelminthes are specialized to perform– **Osmoregulation and Excretion**	Karnataka CET-20.05.2023
Identify the larval stages in the development of liver fluke– **Miracidium, Sporocyst, Redia, Cercaria**	AP EAPCET-23.05.2023, Shift-II
The larval stages of the parasite that causes gigantism in snail is– **Fasciola hepatica**	AP EAPCET-23.05.2023, Shift-I
Ladder-like nervous system and flame cells are found in– **Platyhelminthes**	AP EAPCET-11.07.2022 Shift-I
Alimentary canal is absent in– **Tapeworm**	AP EAMCET-25.09.2020 Shift-I Rajasthan PMT-1998
Ascaris belongs to nematode and Taenia belongs to Platyhelminthis, but they exhibit as a common character– **Bilaterally symmetrical and triploblastic**	AP EAMCET-25.09.2020 Shift-I
Platyhelminthes animal group are– **Triploblastic, bilaterally symmetrical acoelomates**	AP EAMCET-24.09.2020 Shift-II
Animal of which phylum have hooks and suckers and are endoparasite on other animals– **Platyhelminthes**	AIIMS-25.05.2019 Shift-I
Fasciola parasite shows alternation of generation and alternations of hosts in its– **Life cycle**	AMU -2006 / BVP-2001
Bladder worm/cysticercus is the larval stage of– **Tapeworm**	AIPMT-1991

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The scientific name of lung fluke of man is– **Paragonimus westermani**	**Uttarakhand PMT-2010 APEAMCET-2002**
Solenocytes are associated with– **Excretion**	**MP PMT-2013**
The larval from of Schistosoma that enters the snail– **Miracidium**	**AP EAMCET-1998**
Vitelline glands are found in– **Fasciola**	**Manipal-2001**
Cysticercus is not the larval stage of– **Fasciola**	**Haryana PMT-2001**
Tapeworm occurs as a parasite in– **Intestine**	**J&K CET-2001**
They are all have flattened bodies is common amongst– **Tapeworm, Liver fluke, and Planaria**	**Rajasthan PMT-2001**
The excretory cells, that are found in platy helminthes are– **Flame cells, Protonephridia and Solenocytes**	**BCECE-2012 J&K CET-2007**
Anus is absent in– **Fasciola**	**HP CET-2012**
Dugesia animal has– **Rhabdites**	**Rajasthan PMT-2000**
Flatworms animals are– **Triploblastic**	**AIPMT (Screening)-2010**
One example of animals having a single opening to the outside that serves both as mouth as well as anus is– **Fasciola**	**AIPMT (Screening)-2010**
Self fertilization is seen in organism– **Liver fluke**	**Karnataka CET-2007**
In contrast to annelids the platyhelminthes show– **Absence of body cavity**	**JIPMER-2007**
The animal in which the space between the gut and the body wall is filled with mesenchyme is– **Echinococcus**	**AP EAMCET-2008**
Mehlis gland in tapeworm is associated with– **Reproduction**	**VMMC-2014 MGIMS Wardha-2013 APEAMCET-1999**
Cysticercus stage is formed in– **Taenia**	**WB JEE-2010**
Cercaria is an avtively swimming free-living and non – feeding stage of the– **Liver-fluke**	**AMU-2015**
Taenia solium derives its energy from the breakdown of– **Glycogen**	**BVP-2008 Uttarakhand PMT-2007 AP EAMCET-1998**
Flatworms excrete through– **Protonephridia**	**Manipal-2012, AFMC-2002**
Taenia solium is associated with– **Strobilisation, Apolysis and Premonition**	**Uttarakhand PMT-2004**
Taenia solium belongs to class– **Cestoda**	**VMMC-2010, JIPMER-1997**
The trematode parasite infecting human lungs with two intermediate hosts in its life-cycle is– **Paragonimus westermani**	**AP EAMCET-2003**
Infective stage to man of the parasite that causes haematuria is– **Cercaria**	**AP EAMCET-2004**
Laurer's canal is characteristic feature of– **Fasciola**	**VMMC-2014**
Taenia does not have any– **Alimentary canal**	**JIPMER-2001**
Hymenolepis nana is commonly known as– **Dwarf tapeworm**	**VMMC-2014 AP EAMCET-2001**
Schistosoma is a parasite found in– **Blood**	**BCECE-2006 / VMMC-2005 AMU-2004**
Gynaecophoric canal is found in– **Schistosoma haematobium (male)**	**DUMET-2001**
Respiratory, blood vascular and skeletal systems are absent in the members of phylum– **Platyhelminthes**	**BVP-2015**
Bipinnaria is not a larval stage of– **Flatworm**	**VMMC-2008 / AMU-2008**
An acoelomate with Protandrous condition is– **Taenia**	**AP EAMCET-2000**
Mosaic cleavage occurs in– **Echinococcus granulosus**	**Rajasthan PMT-2000**
Metamerism is not the character of– **Taenia solium**	**BCECE-2008**
Aschelminthes	
Body cavity of adult ascaris is– **Pseudocoelom**	**Rajasthan PMT-2009 CMC Vellore-2009 Punjab MET-2009 MGIMS Wardha-2004 UP CPMT-2004 / JIPMER-1995**
Filariasis is caused by– **Wuchereria**	**MGIMS Wardha-2011 BHU PMT Screening- 2011 AMU-2008 / Manipal-2005**

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Its secondary host is female Anopheles mosquito is not correct related to– **Wuchereria**	**AP EAPCET-11.07.2022 Shift-I**
Wuchereria bancrofti causes– **Lymphatic filariasis**	**MHT CET-2019**
Coelozoic parasite with syncitial epidermis, pseudocoelom and rhabditiform larva during development– **Ascaris**	**AP EAMCET-24.04.2019 Shift-I**
The genome of Caenorhabditis elegans consists– **97 million dp and 18000 genes**	**CMC Vellore-2013**
In the life cycle of Wuchereria, 3rd and 4th moults of microfilaria take place in– **Lymph vessels of man**	**AP EAMCET-2013**
In the life of cycle of Ascaris lumbricoides rhabditiform larva undergoes 2nd and 3rd moulting in– **Alveoli of lungs**	**AP EAMCET-2014**
Infection of Ascaris usually occurs by– **Drinking water containing eggs of Ascaris**	**NEET-2013**
The anterior V-spot in microfilaria of Wuchereria represents– **Excretory system**	**WB JEE-2011**
Wuchereria is found in– **Lymph nodes**	**UP CPMT-2007, AIIMS-2002**
Wuchereria bancrofti is transmitted by– **Culex mosquito**	**BVP-2010**
Ascaris has no– **Intermediate host**	**JIPMER-2005**
Ascaris larva is called– **Rhabditiform**	**VMMC-2008 / AMU-2008 AIPMT-1992**
The embryonated egg of Ascaris represents– **an egg with a juvenile**	**VMMC-2013 Haryana PMT-2000 AIPMT-1997**
Flooding of the field controls– **Nematode**	**BCECE-2015**
Ancylostoma is also called– **Hookworm**	**BCECE-2015**
Pseudocoelomic organism belongs to– **Aschelminthes**	**BCECE-2012, DUMET-2006**
Egg with second stage larvae is the infective stage of– **Ascaris lumbricoides**	**CMC Vellore-2015**
Pin-worm is– **Enterobius**	**MP PMT-2013 Punjab MET-2004 AP EAMCET-1998**
Number of moulds, a larva of Ascaris undergoes to become an adult, is– **Four**	**AP EAMCET-2000 AP EAMCET-1998**
Posterior end of male Ancylostoma has– **Bursa**	**BVP-2008 Uttarakhand PMT-2007 AP EAMCET-1998**
Caudal sensory organs (Phasmids) are present in– **Nematodes**	**Punjab MET-2011**
Purgative to expel Ascaris is– **oil of Chenopodium**	**Punjab MET-2011**
In Ascaris, the coelom is– **Pseudocoelom**	**UP CPMT-2012 Rajasthan PMT-2008 CG PMT-2008**
Respiration in Ascaris is– **Aerobic respiration and anaerobic respiration**	**MGIMS Wardha-2012 Rajasthan PMT-1999**
Schistosoma is not a– **Nematode parasite**	**Haryana PMT-2001**
Thigmotaxis is not shown by– **Ascaris**	**BCECE-2010, JIPMER-2009 UP CPMT-2008**
The first nematode parasite to be discovered is– **Dracunculus medinensis**	**Rajasthan PMT-2000**
A triploblastic pseudocoelomate, bilaterally symmetrical human parasite which is oviparous and the transmission is by contact. It is– **Hook worm**	**AP EAMCET-2006**
From the following a monogenetic parasite is– **Ascaris**	**AP EAMCET-2008**
Ascaris is characterized by– **Presence of neither true coelom nor metamerism**	**Rajasthan PMT-2010 AIPMT-2008**
Development and moulting takes place in the alveoli of lungs reference to– **Ascaris**	**UP CPMT-2004**
Ascaris is– **a parasite**	**Rajasthan PMT-2004**
In Ascaris, eggs are fertilised in the– **Lower part of uteri**	**BVP-2010**
The infection of Enterobius is caused to man by– **Contamination**	**UP CPMT-2001**
Nemathelminthes group of animals blastocoels is persistent as body cavity in– **Adult**	**AP EAMCET-2004, 2001**
The length of female Ascaris lumbricoides is– **200-350 mm**	**Rajasthan PMT-2000**
Muscle cells of Ascaris are arranged in– **Platymydrian**	**Rajasthan PMT-2000**

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Oesophagostomum columbianum is– **Holotype**	**Rajasthan PMT-2000**
The thin layer of epidermis having scattered nuclei and no partition walls below the cuticle of Ascaris is known as– **Syncytial epidermis**	**CMC Ludhiana-2011**
Amphids are cuticular elevations on ventrolateral lips of Ascaris, these are– **Chemoreceptors**	**CMC Ludhiana-2008**
Sperms in Ascaris are characterized by one unusual feature– **Lack of flagellum**	**AMU-2003**
Annelida	
The spermathecae in earthworm are present in– **6^{th}, 7^{th}, 8^{th} and 9^{th} segments**	**AP EAPCET-22.05.2023, Shift-II**
Annelida have definite number of segments in class– **Hirudinea**	**TS EAMCET-09.08.2021 Shift-I**
A definite number of body segments is found in– **Leech**	**Uttarakhand PMT-2011** **Rajasthan PMT-2001**
Metameric segmentation is the characteristic of– **Annelida and Arthropoda**	**BHU PMT (Mains)-2010** **Punjab MET-2006** **BCECE-2013**
Connecting link between annelids and molluscs is– **Neopilina**	**JIPMER-2010,2008**
The nephridia in earthworm are analogous to– **Flame cells of Planaria**	**AIPMT-1996**
Pontobdella is a– **Marine leech**	**Haryana PMT-2011** **Punjab MET-2011**
Ventral nerve cord is common in– **Annelida and arthropods**	**Rajasthan PMT-2003** **Punjab MET-2004**
Annelids have a central nerve cord that is– **Ventral**	**Punjab MET-2005**
Forest of nephridia are present in– **Clitellar region**	**Rajasthan PMT-2005**
Posterior sucker of hirudinaria assists in the locomotion of the– **Organism stated**	**JIPMER-2004**
Pheretima and its close relatives derive nourishment from– **Decaying fallen leaves and soil organic matter**	**AIPMT (Screening)-2012**
In Polychaeta, the setae are– **Numerous**	**UP CPMT-2011**
The larva of phylum Annelida is called as– **Trochophore**	**VMMC-2011, 2010** **Manipal-2010**
All worms are– **Triploblastic**	**MGIMS Wardha-2003**
Annelida advanced over Nematoda are– **Closed circulation, True coelom and Metameric segmentation**	**AMU-2006** **Punjab MET-1999**
Hirudinaria animal is– **Sanguivorous**	**AMU-2005, Manipal-2004** **Uttarakhand PMT-2004**
Nereis animals is– **Predaceous**	**CG PMT-2007**
In Pheretima the glands that help in binding the worms during copulation are– **Accessory glands**	**AP EAMCET-2003**
In Pheretima, the cells that are analogous to hepatic cells of vertebrates are– **Chloragogen cells**	**AP EAMCET-2003**
Nephridia in Pheretima are formed from– **Ectoderm**	**AP EAMCET-2004**
External segmentation is absent but internal segmentation is present in– **Archiannelida**	**AMU-2008**
The dorsal side of the skin of Pheretima is brown due to– **Porphyrin**	**AP EAMCET-2001**
Macro nephridia does not found in– **Earthworm**	**AFMC-2004**
Each male genital opening of Pheretima has separate opening of– **Three ducts**	**JCECE-2010**
In Pheretima locomotion occurs with the help of– **Circular, longitudinal muscles and setae**	**JCECE-2003**
Arthropoda	
Malpighian tubules are– **Excretory organs of insects**	**VMMC-2012, UP CPMT-2008** **MGIMS Wardha-2008** **Rajasthan PMT-2008** **AIPMT-1990, UP CPMT-2012**
Spider is not an– **Insect**	**Rajasthan PMT -2011** **JIPMER-2005, BVP-2002** **Rajasthan PMT-1999**
Superficial meroblastic cleavage occurs in– **Insects**	**AFMC-2006, 2008** **Punjab MET -1999** **AIPMT-1991**

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Green glands present in some arthropods help in–	**Excretion**	**Punjab MET-2009 CMC Vellore-2009 Rajasthan PMT-2009 UP CPMT-2001, 2009**
In hymenopteran insects the unfertilized eggs develop into–	**Drones**	**AP EAPCET-22.05.2023, Shift-II**
House fly belongs to–	**Muscidae family**	**RE-NEET (UG)-06.06.2023 (Manipur)**
Pavo, Psittacula, Corvus animals, digestive tract has additional chambers like–	**Crop and gizzard**	**NEET-2022**
Dalmanites is an extinct marine–	**Arthropoda**	**AP EAPCET-12.07.2022 Shift-I**
In the process of evolution, striated muscles appeared for the first time in the phylum–	**Arthropoda**	**AP EAMCET-11.07.2022 Shift-II**
Lepisma is commonly known as–	**Silver fish**	**TS EAMCET-30.07.2022 Shift-II**
Malphigian tubules, coxal glands and green glands set of excretory organs is found in–	**Arthropoda**	**AP EAMCET-12.07.2022 Shift-II**
A unit of photoreception in the eye of cockroach is–	**Ommatidium**	**AP EAMCET-03.09.2021 Shift-II**
Parapodia features is not present in the phylum–	**Arthropoda**	**AP EAPCET-07.09.2021 Shift-I**
Male larva of silkworm possesses–	**Herold's gland**	**Tripura JEE-2019**
The muscles associated with the heart of insects are–	**Alary**	**AP EAMCET-1998 Punjab MET-2019**
Maggot is larva of–	**Housefly**	**JIPMER-2019 / JCECE-2009 DU MET-2004**
Trilobite larva is present in the development of–	**Limulus**	**TS EAMCET-02.05.2018 Shift-II**
Bombyx, Palaemon, Limulus – Arthropoda belong to–	**Same phyla**	**AIIMS-26.05.2018 Shift-II**
Commercial silk is obtained from–	**Cocoon/pupa**	**MGIMS Wardha-2003**
Lac is obtained from–	**Laccifer**	**MGIMS Wardha-2003**
In honey bee royal jelly is secreted from–	**Pharyngeal gland**	**MGIMS Wardha-2003**
Cyclops animal belongs to class–	**Crustacea**	**WB JEE-2010, BCECE-2006**
The major excretory product of arthropods is–	**Uric acid**	**BVP-2010**
Laccifer lacca insect is–	**Economically useful**	**UP CPMT-2010**
Class of spider is–	**Arachnida**	**UP CPMT-2010, AMU-1998**
The largest phylum in respect of number of species is–	**Arthropoda**	**UP CPMT-2003, DUMET-2005**
Butterfly belongs to–	**Lepidoptera**	**UP CPMT-2003, DUMET-2005**
An insect without metamorphosis is–	**Silver Fish**	**Uttarakhand PMT-2007**
House-fly possesses–	**one pair of wings**	**Uttarakhand PMT-2007**
The larva of Bombyx mori is–	**Caterpillar**	**DUMET-2009 Uttarakhand PMT-2007 BVP-2008**
Book lungs respiratory organs are present in–	**Spiders and scorpions**	**AFMC -2009**
The stages between larval moults in an insects are called–	**Instars**	**J&K CET-2012**
Insect is useful for us–	**Bombyx**	**MGIMS Wardha-2005**
Common characteristics of mosquitoes, houseflies and cockroaches are–	**three pair of legs and one pair of developed wings**	**Rajasthan PMT-2011 Haryana PMT-2004**
Termites cannot digest cellulose of wood in the absence of–	**Trichonympha**	**AP EAMCET-2002, 2001**
Arthropods are characterized by–	**Jointed appendages, open blood vascular system and triploblastic**	**AMU-2005, Manipal-2003 J & K CET-2012**
a neem product used as insect repellent is–	**Azadirachtin**	**AFMC-2004**
Sericteris (silk gland) are modified–	**Salivary gland**	**VMMC-2008**
Ants belong to order–	**Hymenoptera**	**BVP-2013**
Blood does not transport oxygen in–	**Cockroach**	**BVP-2013**
Apis dorsata refers to–	**Rock bee**	**BVP-2012**
Study of ticks and mites is–	**Acarology**	**Manipal-2010**
Excretory product of spider is–	**Guanine**	**CMC Vellore-2009 UP CPMT-2009, 2007**
Excretory organ of spider is–	**Coxal gland**	**BCECE-2004**
The development of adult characteristics in a moulting insect is promoted by–	**Ecdysone**	**Uttarakhand-2005**

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Antennal gland functions as excretory organ in–	**Prawn animals**	**Kerala PMT-2008**
Limulus belongs to–	**Merostomata**	**BVP-2001**
Heamocyanin is found in–	**Prawn**	**BVP-2000**
Prawn, Scorpion, Locusta group of animals belongs to the same–	**Phylum**	**NEET-2013**
3- segmented club shaped maxillary pulp is present in–	**Male Anopheles**	**UP CPMT-2007**
Daphnia is commonly known as–	**Water fleas**	**UP CPMT-2007**
Moulting hormone is secreted by–	**Prothoracic gland**	**JIPMER-2005, 2008**
Cockroach and Scorpion are common to leech for feature–	**Ventral nerve cord**	**AIIMS-2009**
Limulus is referred as–	**Living fossils**	**AIIMS-2015**
Common among silverfish, scorpion, crab and honey bee is–	**Jointed legs**	**AIPMT-1997 Haryana PMT-2000**
Insects eggs are–	**Megalecithal and centrolecithal**	**Punjab MET-2006**
Superficial meroblastic cleavage occurs in–	**Insects**	**JCECE-2007**
Mosquito–	**Sanguivores**	**Manipal-2002**
Cray fish is a–	**Crustacean animal**	**CG PMT-2005**
The scientific name of the moth which produce tasar is–	**Antheraea mylitta**	**MPPMT-2013 WB JEE-2011**
Mouth parts of housefly are–	**Sponging and sucking type**	**DUMET-2006**
Fruit fly animals is mostly used in–	**Genetics engineering**	**DUMET-2005**
Cantharidin is obtained from–	**Beetles**	**MP PMT-2013**
Insects have–	**3 pairs of legs**	**J&K CET-2001, AFMC-2005**
Oak silkwrom is–	**Antheraea roylei**	**BCECE-2001**
Crab is–	**Non-poisonous**	**CG PMT-2004**
Sugar presented in honey is–	**Glucose**	**Haryana PMT-2000**
Haemocoel is found in–	**Cockroach and Pila**	**Manipal-2008**
Complete metamorphosis is found in–	**house-fly and mosquito**	**Rajasthan PMT-2005**
They all possess dorsal heart is true about–	**Nereis, Scorpion, Cockroach and Silver fish**	**AIPMT-2007**
A dorsal horn is present on the ..... of mulberry silk worm (caterpillar)–	**8th abdominal segment**	**Karnataka CET-2009 Manipur-2009**
Bombykol or gyplure is a–	**Pheromone**	**AMU-2007**
In the life cycle of mosquito, comma-shaped stage is–	**Pupal stage**	**Uttarakhand PMT-2008 Manipal-2008, BVP-2012**
Entomology is concerned with the study of–	**Various aspects of insects**	**Karnataka CET-2005**
Parapodia is not present in the–	**Phylum - Arthropoda**	**NEET-2016 Phase-I**
Bilateral symmetry, metameric segmentation, coelom and open circulatory system are the features of–	**Arthropoda**	**JIPMER-2012**
The endocrine gland of insects, which secretes the juvenile hormone, is–	**Corpora allata**	**AIIMS-1997**
The organs that assist in sound production in mosquito are–	**Halters**	**AP EAMCET-2007**
With respect to cockroaches–	**Males bear short anal styles not present in females**	**NEET (Karnataka)-2013**
Life span of worker Honey Bee–	**45 days**	**AIPMT-1999**
Insects have the highest number of–	**Species in nature**	**AIPMT (Screening)-2011**
Fish selectively feed on larva of mosquito is–	**Gambusia**	**AIPMT-2001**
Palamnaeus arthropods is–	**Viviparous**	**AP EAMCET-2010**
The larval stage of a harmful insect causing a cavity like pathological condition in human subcutaneous tissue is–	**Maggot**	**AP EAMCET-2008**
Moth has feathery antennae but butterfly has club shaped antennae differentiate a butterfly from a–	**Moth**	**Karnataka CET-2010**
In the insect which feeds on nectar the proboscis of formed by–	**Glossa**	**AP EAMCET-2005**
The main excretory organ of prawn is–	**Green gland**	**AP EAMCET-2005**
Malpighian tubules are–	**Excretory organs of insects**	**JIPMER-2009**
Class- Crustacea differs from Insecta in having–	**two pairs of antennae**	**UP CPMT-2005**

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Mandibles are absent in–	**Housefly**	**UP CPMT-2011**
Silver fish belongs to–	**Class 1 Insecta**	**UP CPMT-2011**
An insect whose mouth parts are biting and chewing type in the larval condition, while they are siphoning type in the adult and this insect gives an economically important substance during yet another stage of its development. The insect is–	**Bombyx**	**AP EAMCET-2009**
Moth is an–	**Insect**	**UP CPMT-2002**
Mouth part of mosquito is–	**Sucking and piercing type**	**UP CPMT-2002**
Scorpion belongs to a class–	**Ticks**	**BVP-2004**
Mollusca		
In Mollusca, eye is present over a stalk, called–	**Ommatophores**	**UP CPMT-2012, 2008, 2007 VMMC-2012 BCECE-2010 / JIPMER-2009 Rajasthan PMT-2008 CG PMT-2008**
Osphradium of Pila globosa is–	**Chemoreceptor**	**Punjab MET-2011 VMMC-2010 AP EAMCET-2005 DU MET-2004 Manipal-2002 / AFMC-2002 UP CPMT-2001**
Connecting link between Annelida and Mollusca is–	**Neopilina**	**Uttarakhand PMT-2009 VMMC-2009, 2011 DU MET-2004, UP CPMT-2001**
Veliger larva occurs in phylum–	**Mollusca**	**Punjab MET-2009 Rajasthan PMT-2009 UP CPMT-2009 DUMET-2001,2002**
Correctly matched set of phylum, class and example is–	**Mollusca-Bivalvia-Pinctada**	**BCECE-2014 / BVP-2014, 2009 VMMC-2009**
The generic name of tusk shell is–	**Dentalium**	**BVP-2005 / AMU-2005 Haryana PMT-2004 Manipal-2003**
Natural pearl belong to–	**Mollusca**	**UP CPMT-2003 Punjab MET-2006 DUMET-2005 Rajasthan PMT-2003**
The larval form of gastropods is–	**Veliger**	**TS EAMCET-11.05.2023, Shift-I**
The stomach of the animals of this class contains a crystalline style–	**Pelecypoda**	**TS EAMCET-31.07.2022 Shift-I**
The triploblastic animals that exhibit asymmetry in adult stage are–	**Gastropods**	**TS EAMCET-10.08.2021 Shift-I**
Correctly matched set of phylum, class and example is–	**Mollusca–Bivalvia–Pinctada**	**JIPMER-2012 AP EAMCET03.092021 Shift-I**
Radula is a part of animal–	**Mollusca**	**JIPMER-2019**
Most advanced invertebrates are–	**Cephalopoda**	**JIPMER-2019**
Torsion of visceral mass is seen in animals belonging to class–	**Gastropoda**	**JIPMER-2017**
Ctenidia are the respiratory organs–	**Mollusca**	**TS EAMCET-12.05.2017**
Moti is formed from–	**Pinctada**	**VMMC-2010, 2011**
Radula is found in–	**Pila sp.**	**WB JEE-2010 / BCECE-2012**
Cephalopoda have eye structure nearest to that of–	**Vertebrates**	**AFMC-2000**
Chiton belongs to class–	**Polyplacophora**	**AMU-2015**
Largest invertebrate is–	**Giant squid**	**Rajasthan PMT-1996 AFMC-2004**
Octopus is–	**Devil fish**	**Rajasthan PMT-1996**
Chiton belongs to the class–	**Amphineura**	**Manipal-2004, AMU-2005**
The study of molluscan is called–	**Malacology**	**AMU-2005 / Manipal-2004 Uttarakhand PMT-2004**
Trematoda classes do not belong to–	**Phylum Mollusca**	**JIPMER-1998**
Phylum Mollusca can be distinguished from other invertebrates by the presence of–	**a mantle and non-segmented body**	**DUMET-2010 Rajasthan PMT-1998**
Glochidium larva is absent in–	**Sepia**	**UP CPMT-2012**

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The second largest number of species containing phylum in the animal kingdom is–	**Mollusca**	**J&K CET-2009**
The presence of the blood pigment haemocyanin is a characteristic of the–	**Pila and Carcinus**	**JIPMER-1997**
Snail belongs to the class–	**Gastropoda**	**J&K CET-2012**
Correct member of the phyla is–	**Mollusca-Cephalopoda-Octopus**	**Rajasthan PMT-1998**
Trochophore is the larva of–	**Chiton, Neopilina and Pila**	**MGIMS Wardha-2005** **UP CPMT-2005**
The phenomenon of torsion occurs in–	**Gastropoda**	**AMU-2010**
The excretory material of bony fish is–	**Ammonia**	**UP CPMT-2008**
Father of pearl industry is referred to as–	**Kokichi Mikimoto**	**CG PMT-2007, 2004**
Ink glands are found in–	**Sepia**	**CG PMT-2009**
Pearls are produced by the animals of phylum–	**Mollusca**	**CG PMT-2009**
The name of class to which pearl oyster belongs is–	**Pelecypoda**	**JIPMER-2000**
Cuttle fish belongs to phylum–	**Mollusca**	**JIPMER-1995**
Devil fish animal belongs to the–	**Phylum-Mollusca**	**AMU-2012, CG PMT-2010**
Molluscan blood contains–	**Haemocyanin**	**MGIMS Wardha-2011**
Veliger is a–	**Molluscan larva**	**AP EAMCET-2000**
A cephalopod without a shell–	**Octopus**	**AP EAMCET-2015, 1999**
Shell of molluscs is produced by its–	**Mantle**	**HP CET-2012 / AMU-2002**
The biological name of feather star is–	**Antedon**	**Haryana PMT-2011**
Amphineuran mollusc is–	**Chiton**	**Haryana PMT-2011**
A Molluscan with calcareous spicules is–	**Chaetoderma**	**AP EAMCET-2014**
Mantle, foot and shell are the characteristics of–	**Nautilus**	**JIPMER-2005**
A wood boring mollusc/shipworm is–	**Teredo**	**AIPMT-1988**
Columnar epithelial cells of mantle secretion forms the–	**Pearls**	**CG PMT-2005**
Dentalium and Pulsellum molluscs possess–	**Captacula**	**TS EAMCET-15.05.2016**
King crab is an example of–	**Living fossil**	**WB JEE-2014**
A pearl oyster secretes pearls to–	**protect itself against invading parasite**	**CG PMT-2004**
Neopilina animals is not only a living fossil but also considered as–	**Connecting link**	**AP EAMCET-2007**
Osphradium in mollusca has function of–	**testing physical and chemical qualities of food**	**UP CPMT-2005**
Echinodermata		
Aristotle's lantern is a characteristic of the–	**Echinoidea class of Echinodermata**	**HP CET-2011, VMMC-2005** **AMU-2004 / BVP-2003** **AIPMT-1993/ BVP-2001** **Manipal-2001** **Rajasthan PMT-1999** **JIPMER-1998 , AIPMT-1993**
Echinoderms has radial symmetry in adult and bilateral symmetry in–	**Larva**	**UP CPMT-2013** **Karnataka CET-2012** **JCECE-2009** **CMC Ludhiana-2009** **AFMC-2008, DU MET-2004** **AIPMT-2004 /BVP-2001**
Connecting link between Echinodermata and Chordata is–	**Balanoglossus**	**CMC Ludhiana-2015** **AMU-2008, VMMC-2008** **AP EAMCET 2002**
In Echinodermata, tube feet are related with–	**Locomotion**	**HP CET-2011 / VMMC-2005** **AMU-2004 / BVP-2003**
Tube feet is the locomotory organ of–	**Star fish**	**BHU PMT (Screening)-2011** **CMC-Ludhiana-2011** **JIPMER-2010 / AIPMT-1994**
Aristotle's lantern is present in–	**Echinoidea**	**AP EAPCET-22.05.2023, Shift-I**
Water vascular system is found in–	**Sea-cucumber**	**AP EAMCET-24.09.2020 Shift-I** **WB JEE-2010**
Secondary radial symmetry is found in–	**Echinodermata**	**VMMC-2011** **Uttarakhand PMT-2009**

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Radial symmetry is found in–	**Starfish**	**Rajasthan PMT-2004**
Basket star belongs to class–	**Ophiuroidea**	**AFMC-2000 / AIIMS-1999**
Starfish belongs to phylum–	**Echinodermata**	**UP CPMT-2003**
Tube feet are the locomatory organs in–	**Echinoderms**	**UP CPMT-2012 Haryana PMT-2004 Manipal-2003**
Tube feet is an exclusively–	**Echinoderm character**	**AMU-2010**
The response to external stimulus is quicker and more precise in this symmetry–	**Bilateral**	**AP EAMCET-2003**
Aristotles lantern is connected with–	**Mastication**	**AMU-2008 / VMMC-2008**
Ambulacral system is mainly useful for–	**Locomotion**	**AMU-2005, Manipal-2004**
Water vascular system is found in–	**Echinodermata**	**CMC Vellore-2010 / AMU-2009 MGIMS Wardha-2009**
Ophiothrix is an–	**Enterocoelic invertebrate**	**DUMET-2001 AP EAMCET-1997**
Starfish belongs to the class–	**Asteroidea**	**Rajasthan PMT-2011 AIPMT-1992**
The water vascular system performs all but not one function which is that–	**Hormone secretion**	**VMMC-2003 Haryana pmt-2001**
Scientific name of starfish is–	**Asterias**	**AMU-2003**
The nature of exoskeleton in echinoderms is–	**Calcareous**	**J&K CET-2002**
The phylum has none of fresh water from–	**Echinodermata**	**BVP-2004 / DU MET-2003 Rajasthan PMT-1999**
The presence of tube feet is a characteristic feature of the phylum–	**Echinodermata**	**Kerala PMT-2009 / BVP-2005 Manipal-2002**
The echinodermata are exclusively–	**Marine animals**	**Punjab MET-2011 JIPMER-2010**
Antedon belongs to class–	**Crinoidea**	**AIIMS-2000**
Ambulacral grooves are absent in the living forms of the class–	**Ophiuroidea**	**AIIMS-2002**
Asterias does not have an–	**Excretory system**	**Kerala PMT-2011**
Autotamy, a phenomenon is well marked in–	**Echinodermata**	**Punjab MET-2011**
Water vascular system is a pecularity of–	**Echinodermata**	**WB JEE-2008 Punjab MET-2008 Rajasthan PMT-2001**
Broken arms are regenerated in–	**Echinoderms**	**BVP-2011**
The bilateria member that exhibits pentaradial symmetry is–	**Neometra**	**AP EAMCET-2008**
In Ophiuroidea, branched arms are seen in–	**Gorgonocephalus**	**AP EAMCET-2009**
Hemichordata		
Radial symmetry is NOT found in adults of phylum–	**Hemichordata**	**NEET (UG) 07.05.2023**
Larva of balanoglossus is–	**Tornaria**	**AP EAMCET-12.07.2022 Shift-II AP EAPCET-07.09.2021 Shift-I**
In sea anemone, the symmetry is–	**Radial**	**MGIMS Wardha-2008**
Blood vascular system in hemichordate is–	**Open**	**AFMC-2006**
Modern representative of an ancient link between the echinoderms and the chordates is represented by–	**Hemichordata**	**JCECE-2015**
Excretory organ of Balanoglossus is–	**Proboscis gland**	**Haryana PMT-2011 Kerala PMT-2011**
Connecting link between chordates and non-chordates is–	**Balanoglossus**	**UP CPMT-2011**
Chordata		
The group of anamniota includes–	**Fishes an amphibians**	**VMMC-2012 / JIPMER-2009 CG PMT-2008 / BVP-2007 MGIMS Wardha-2006 AP EAMCET-1998**
Example of anadromous migration is–	**Salmon and Hilsa**	**AP EAPCET-22.05.2023, Shift-I**
The closest invertebrate relatives of chordates belong to the phylum–	**Echinodermata**	**AP EAPCET-23.05.2023, Shift-II**
Pteropus is commonly called–	**Flying fox**	**TS EAMCET-11.05.2023, Shift-I**

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The connecting link between reptiles and mammals is– **Archaeopteryx**	AP EAPCET-22.05.2023, Shift-II
The notochordal mesoderm induces the overlying ectodermal cells that are involved in the formation of– **Neural plate**	AP EAPCET-22.05.2023, Shift-II
Prochordate that exhibits bioluminescence– **Pyrosoma**	AP EAPCET-22.05.2023, Shift-II
Blocks of muscles found in cephalochordata are– **Myotomes**	AP EAPCET-23.05.2023, Shift-I
The nerve cord chordates is– **Single, hollow, tubular and non-ganglionated**	AP EAMCET-06.09.2021 Shift-I
Vitelline membrane is a– **Primary egg membrane**	AP EAMCET-24.09.2020 Shift-I
The distinguishing feature of all chordates is– **an elastic rod (notochord)**	AP EAMCET-24.09.2020 Shift-II JIPMER-2000
Perissodactyla represents order of– **Horse**	NEET-2017
An important characteristic that Hemichordates share with Chordates is– **Pharynx with gill slits**	NEET-2017 / JIPMER-2000
The type of vertebrae in sub-order ophidian is– **Procoelous**	Punjab MET-1999 AFMC-2002
The characters of ophiuroidea of phylum Echinodermata is– **Closed Ambulacral grooves, tube feet without suckers. Absence of anus**	AP EAPCET-23.05.2023, Shift-II
Non-chordates have– **absence of hepatic portal system**	BCECE-2005
Dorsal hollow nerve cord is the characteristic of– **Chordata**	UP CPMT-2010
The mullerian duct in the female amniotes develops into– **Oviduct**	VMMC-2013
All chordates at one or other stage possess– **Pharyngeal gill slits**	MGIMS Wardha-2014
Equus rests on– **One digit**	Manipal-2011
The character which distinguishes vertebrate from other chordates is– **Presence of cranium**	JIPMER-1998
The portal system seen in all vertebrates is– **Hepatic**	JIPMER-1997
Most of the cartilages in vertebrate embryo are replaced in adult by– **Bones**	Kerala PMT-2015
Feature of acraniate vertebrates are– **median fin, 7 gill slits, acoelous vertebral column**	Rajasthan PMT-1998
Petromyzon and Myxine are oldest and primitive– **Vertebrates**	Rajasthan PMT-1998
In vertebrates the nerve growth factor occurs in the– **Salivary secretions**	AMU-1998
Order Primata contains– **Monkeys and man**	UP CPMT-2001
Animals having a built in thermostat to maintain constant body temperature are known as– **Homeothermic**	VMMC-2012
The Salientia member with digits of fore limbs and hind limbs webbed is– **Rhacophorus**	AP EAMCET-2004
Vertebral column is not present in all the– **Chordates**	JIPMER-1995
The scientific name of gharial is– **Gavialis gangeticus**	JIPMER-2013
Notochord originates from– **Mesoderm**	JIPMER-2013
Dorsal tubular nerve cord is a primary character of– **Phylum-Chordata**	VMMC-2015
Presence of claspers is an important character in– **Sphyrna**	CG PMT-2011
Canis familiaris is a– **Species**	CG PMT-2011
Retrogressive metamorphosis is present in– **Herdmania**	VMMC-2010 Rajasthan PMT-2006 AMU-1998
The heart of molluscs and vertebrates are of– **Myogenic type**	CMC Ludhiana -2013
Two chambered heart is a feature of– **Fishes**	Kerala PMT-2009
Pharyngeal gill-slits are found in– **Dogfish**	Uttarakhand PMT-2011
Dog fish is a– **True fish**	UP CPMT-2013
A jawless fish, which lays eggs in fresh water and whose ammocoetes larvae after metamorphosis return to the ocean is– **Petromyzon**	AIPMT (Re-Exam)-2015
The chordate features shared by the non-chordates are– **Bilateral symmetry, Triploblastic condition and bilateral symmetry and Metamerism**	AIIMS-2011
A chordate character is– **Post-anal tail**	AIPMT-1989
A common characteristic of all vertebrates without exception is– **the presence of well-developed skull**	AIPMT-1994

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Besides annelida and arthropoda, the metamerism is exhibited by– **Chordata**	AIPMT-1995
Cnidoblasts is not found in– **Vertebrates**	WB JEE-2007
Vertebrate nails are derivatives of– **Stratum corneum**	MP PMT-2013
When embryonic development is completed is mother but the embryo not accept-nutrient from mother. Which is know is– **Ovo-viviparous**	Rajasthan PMT-1999
The most primitive vertebrates are– **Ostracoderms**	BVP-2009, VMMC-2009 Uttarakhand PMT-2009
Amphioxus is not a– **Vertebrate**	BVP-2011
The missing link between amphibians and reptiles is– **Seymouria**	Punjab MET-2007
Retractile claws are found in– **Leopard, Hyaena, Cat and Lion**	MP PMT-2013
Connecting link between bird and reptiles is– **Archaeopteryx**	Rajasthan PMT-1999
The ability of animals to regenerate the lost parts of the body was reported by– **Trembley**	CG PMT-2004
Crocodile and Penguin are similar to Whale and Dogfish in features– **Have gill slits at some stage**	AIPMT (Mains)-2010
The post anal tail is present in– **Chordates**	Karnataka CET-2007
Parrot, platypus and kangaroo the common between them– **Homeothermy**	AIPMT-2007
Sea hare is not a– **Vertebrate**	JIPMER-2014
Both hepatic and renal portal systems are found in– **Fishes, Amphibians, Reptiles**	AP EAMCET-2013
Renal portal system is– **Absent in mammals**	JCECE-2014, UP CPMT-2006
A circulatory system which is formed by capillaries and ends with capillaries is– **Portal circulation**	UP CPMT-2006
Heart of elephant is– **Myogenic**	UP CPMT-2002
Urochordata	
The organism that emits light– **Pyrosoma**	TS EAMCET-28.09.2020 Shift-I
Retrogressive metamorphosis is found in– **Urochordata**	AIIMS-2017 / AIIMS-2016 WB JEE-2010
At retrogressive metamorphosis the uro chordate larva– **Loss of notochord, loss of tail and experience reduction of nervous system to a visceral ganglion**	JCECE-2007
Mode of feeding in tunicates is– **Ciliary**	Uttarakhand PMT-2010
Outer covering of tunicates is formed by– **Tunicin**	Rajasthan PMT-1999
Cephalochordata	
The protochordate that doesn't have heart, respiratory pigment, blood corpuscles but performs respiration through the external body surface is– **Branchiostoma**	AP EAMCET-03.09.2021 Shift-I
The outermost covering of the egg of housefly is– **Chorion**	Uttarakhand PMT-2011
Solenocytes are associated with– **Excretion**	JIPMER-2008
Persistent notochord is the feature of– **Cyclostomata**	BCECE-2015
An animal which has a notochord throughout its life– **Amphioxus**	AP EAMCET-1998 VMMC-2004
Labeo is not the example of– **Marine fishes**	WB JEE-2006
The devil fish and sea hare are– **Mollusca**	J&K CET-2008
Notochord is present in the larva of– **Herdmania**	Rajasthan PMT-1998
Presence of notochord throughout the life and length of the body is a feature of– **Cephalochordates**	VMMC-2014 AP EAMCET-2001
Cyclostomata	
Parents of ammocoete larva show– **Anadromous migration**	AP EAMCET-2016
Branch of zoology dealing with the study of fishes is called– **Ichthyology**	VMMC-2009
Anguilla sp. is a– **Catadromous fish**	WB JEE-2010
Petromyzon animal belongs to– **Cyclostomata**	J&K CET-2008
Torpedo is commonly known as– **Electric ray**	HP CET-2011
Venous heart and gills is characteristic of– **Fishes**	Manipal-2000
An anadromous fish– **Petromyzon**	Haryana PMT-2002
The larva of Petromyzon is known as– **Ammocoete**	AMU-1997

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Chondrichthyes		
The larvicidial fish used in biocontrol of mosquitoes–	**Gambusia**	**Tripura JEE-2018 MGIMS Wardha-2014 Uttarakhand PMT-2007 Punjab MET-2003**
Placoid scales is the characteristic feature of class–	**Chondrichthyes**	**JIPMER-2013/ VMMC-2011 J&K CET-2011 / JIPMER-2011**
The excretory material of bony fish is–	**Ammonia**	**BCECE-2014 Kerala PMT-2015 BVP-2007 Rajasthan PMT-2008**
Jaw less fish like vertebrates are–	**Cyclostomes**	**TS EAMCET-11.05.2023, Shift-II**
Heart in fishes is described as–	**Myogenic, bronchial and venous heart**	**AP EAPCET-12.07.2022 Shift-I**
In fishes, ____ maximizes oxygen transfer from water into the gills–	**Counter-current flow**	**MHT CET-08.10.2020 Shift-I**
Syrinx. clavicles are present characters is not correct with respect to–	**Ratitae**	**TS EAMCET-03.05.2018 Shift-I**
Weberian ossicles are found in–	**Fishes**	**AIIMS-1999**
A marine cartilaginous fish that can produce electric current is–	**Torpedo**	**AIPMT-2014 AP EAMCET-1998 BVP-2008**
Fish which can be used in biological control of mosquitoes/larvicidal fish is–	**Gambusia**	**AIPMT-1989**
Cat fish is a–	**True fish**	**JIPMER-1996**
Mystus is not a–	**Carp**	**Punjab MET-2011**
Jaws present in–	**Fishes**	**Rajasthan PMT-1999 MGIMS Wardha-2012**
The character not related to chondrichthyes is–	**Filamentous gills**	**AP EAMCET-2015**
Elasmobranchii endoskeleton is made up of–	**Cartilage**	**Rajasthan PMT-1995**
Sea horse is a–	**Fish**	**CG PMT-2009 BVP-2011**
Scales are absent in–	**Wallago**	**CMC Vellore-2011**
Venous heart and gills is characteristics of–	**Fishes**	**Punjab MET-2004**
The edible freshwater teleosts–	**Catla catla**	**Uttarakhand PMT-2007**
Devil fish is not a–	**True fish**	**Uttarakhand PMT-2007**
Flying fish is–	**Exocoetus**	**BVP-2012 MGIMS Wardha-2007**
Whale is not a–	**Fish**	**HP CET-2013**
Cholesterol is at its lowest level in–	**Fish food**	**Uttarakhand-2005**
Electric organs are found in–	**Rays**	**CG PMT-2006**
Ichthyology is study of–	**Fishes**	**JIPMER-2013**
Presence of claspers is an important character in–	**Sphyrna**	**AP EAMCET-1999**
These organisms have chloride cells–	**Freshwater fish**	**BCECE-2009**
The brood pouch in sea horse is found at the belly of–	**Male**	**AMU-2002**
Dog fish contains idiophores in its–	**Integument**	**Rajasthan PMT-2000**
Sharks and dogfishes differ from skates and rays by–	**Their pectoral fins distinctly marked off from cyclindrical bodies**	**NEET (Karnataka)-2013**
Trygon is found exclusively in the–	**Sea water**	**Karnataka CET-2008**
Osteichthyes		
One of the world's most poisonous fish toxins is released by–	**Puffer fish**	**AIIMS-2012**
This is also known as flying fish–	**Exocoetus**	**BCECE-2015**
This is not a freshwater fish–	**Pomfret**	**BCECE-2015**
The ancestors of modern day Frogs and Salamanders are–	**Coelocanth**	**Karnataka CET-2015**
A fresh water fish–	**Cyprinus carpio**	**AP EAMCET-2002**
The excretory material of bony fish is–	**Ammonia**	**BVP-2012**

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Amphibia		
Ichthyophis belongs to–	**Amphibia**	**AP EAMCET-24.09.2020 Shift-II Karnataka CET-2000 DU MET-2006 Rajasthan PMT-2004**
Foramen of Panizzae is found in the heart of–	**Crocodile**	**HP CET-2011, BCECE-2006 VMMC-2005 / AMU-2004**
The Indian salamander is–	**Tyilotriton**	**AMU-2005 / Manipal-2004 Uttarakhand PMT-2004 AP EAMCET-1997**
Pore in the foetal heart of human beings is–	**Foramen Ovale**	**TS EAMCET-11.05.2023, Shift-II**
The dental formula of an 18 years old man–	**2122/2122**	**TS EAMCET-11.05.2023, Shift-I**
Reservoir host for Trypanosoma gambiense–	**African antelope**	**TS EAMCET-11.05.2023, Shift-I**
Monocondylic skull is not an–	**Amphibian character**	**TS EAMCET-11.05.2023, Shift-I**
Dicondylic skull is characteristic features of–	**Amphibia and Mammalia**	**AP EAPCET-07.09.2021 Shift-I**
The heart of an amphibian is usually–	**three chambered**	**Tripura JEE-2021 KVPY SA-2012**
Male has a brood pouch in–	**Hippocampus**	**AP EAMCET-06.09.2021 Shift-I**
'Sternum' also known as 'breast bone' first appeared in–	**Amphibians**	**TS EAMCET-02.05.2018 Shift-II**
Salamander organisms respire through the–	**Skin**	**KVPY (SA)-2018**
Among vertebrates tympanum, sternum are first appeared in–	**Amphibians**	**AP EAMCET-25.04.2018 Shift-I**
Organ of Jacobson helps in–	**Smell**	**JIPMER-2017**
The upper pigmented part of frog egg is concerned with–	**Camouflage**	**BCECE-2002**
Salamander is–	**Amphibian**	**J&K CET-2003, 2002**
Amphibians were dominant during–	**Carboniferous**	**Kerala PMT-2009**
Proteus anguinus is an example for–	**Effect of light on Pigmentation**	**AP EAMCET-2014**
Tortoise is not a true–	**Amphibian animal**	**AIPMT-1988**
Fire bellied toad is–	**Bombina**	**AIPMT-1988**
Necturus is–	**Mud puppy**	**AIPMT-1988**
The organs appeared for the first time in amphibians–	**Tympanum, sternum and lacrimal glands**	**AP EAMCET-2016**
Echinodermates are exclusively–	**Marine**	**JIPMER-1996**
Spiral valve is present in–	**Truncus arteriosus**	**Punjab MET-2011**
Mesonephric type of kidneys are found in–	**Amphibians**	**JCECE-2003 Rajasthan PMT-2002**
Limbless amphibians are called–	**Caecilian worms**	**J&K CET-2009**
Incomplete double circulation is seen in–	**Amphibians**	**Kerala PMT-2015**
Dicondylic skull with 10 pairs of cranial nerves is present in–	**Amphibia**	**Rajasthan PMT-1998**
Limbless amphibians belong to the order–	**Gymnophiona**	**VMMC-2014, UP CPMT-2001**
Axolotl is name given to larva of–	**Ambystoma**	**Haryana PMT-2011, 2004 Manipal-2003**
Neoteny is seen in amphibians belonging to order–	**Urodela**	**BHU PMT (Screening)-2011**
An animal, which has both exoskeletal and endoskeletal structures is a–	**Tortoise**	**Manipal-2009 Karnataka CET-2009**
The largest RBCs among vertebrates are found in–	**Amphibians**	**CMC Ludhiana-2014**
Salamander can regenerate–	**Limbs, tail and external gills**	**AMU-2003**
Kachuga tectum animal is–	**Roofed terrapin**	**Rajasthan PMT-2000**
Pipa animal is–	**Surinam toad**	**Rajasthan PMT-2000**
Ureters act as urinogenital ducts in–	**Frog males**	**AIPMT (Mains)-2011**
The pair of amphibians found in Indian peninsula is–	**Tylototriton and Ichthyophis**	**AP EAMCET-2009**
Reptilia		
Regeneration of tail in lizards is an example of–	**Epimorphosis**	**CMC Ludhiana-2012 Manipal-2000 Punjab MET-2004 / BVP-2000**
Turtles is a–	**Reptile**	**J&K CET-2012 Rajasthan PMT-2004 Karnataka CET-2002 AMU-2002**

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Python snake in not– **Poisonous**	**Rajasthan PMT-2011 UP CPMT-2001, AIIMS-2000 Rajasthan PMT-1995**
Number of cranial nerves in snakes that belong to class Reptilia– **10 pairs**	**TS EAMCET-10.05.2023, Shift-II**
The group in which sinus venosous is present but conus arteriosus is absent–**Reptil**	**AP EAPCET-22.05.2023, Shift-I**
Chelone animals has three– **Chambered heart**	**NEET (Re-Exam)-04.09.2022**
Sphenodon is a living fossil in– **Reptiles**	**AP EAPCET-11.07.2022 Shift-I DU MET-2003**
Reptilian egg is described as– **Cleidoic, amniotic and megalecithal**	**AP EAMCET-12.07.2022 Shift-II**
The Urinary bladder is absent in– **Snake and Crocodile**	**AP EAMCET-24.09.2020 Shift-II**
The vestiges of girdles are found in– **Python**	**AP EAMCET-25.09.2020 Shift-II AMU-2010**
Organism with Jacobson's organs, paired hemipenis and 12 pairs of cranial nerves is– **Chameleon**	**AP EAMCET-24.04.2019 Shift-I**
The best conserver of water is– **Cobra**	**MHT CET-2019**
Correct matching of animal group and its examples– **Reptilia–Calotes, Heloderma, Uromastix, Draco**	**AIIMS-27.05.2018 Shift-II**
Sphenodon punctatus belongs to– **Reptilia**	**Tripura JEE-2017**
Typhlops is– **Blind snake**	**AIPMT-1988**
Scales and claws sets of derivatives of integumentary structures characterized birds as– **Glorified reptiles**	**JIPMER-2002**
The number of digits in the limb used for walking by reptiles are– **5**	**BCECE-2015**
Sinus venosus is present in– **Fishes, amphibians and reptiles**	**DUMET-2002**
Archaeopteryx is connecting link between– **Reptiles and birds**	**DUMET-2005 Rajasthan PMT-2003 UP CPMT-2003**
The venom of cobra is– **Neurotoxic**	**MP PMT-2013**
Enhydrina is a– **Poisonous snake**	**AP EAMCET-1998**
The type in sub order Ophidia is– **Procoelous**	**AP EAMCET-1998 Manipal-2002**
Camouflage of Chameleon is associated with– **Chromatophore**	**Punjab MET-2011**
Olfactory organs of a snake is– **Jacobson's organ**	**Manipal-2001**
The exact cause of death of cobra bite person is– **Inactivation of nerves**	**BVP-2014**
The truly land animals are– **Calotes**	**J&K CET-2010**
Poison gland is present in– **Male platypus**	**Rajasthan PMT-1995**
Four chambered heart is present– **Reptile Crocodile**	**JCECE-2003 Rajasthan PMT-2002**
Archaeopteryx is a connecting link between– **Reptiles and Aves**	**DUMET-2007 Rajasthan PMT-1995 WB JEE-2015**
Anal tail is found in– **Snake**	**BVP-2008 Uttarakhand PMT-2007 AIPMT-2001**
On the feeding habit, the common house lizard Hemidactylus can be termed as– **Entomophagous**	**BVP-2011**
Snake has– **Immovable eyelids**	**Punjab MET-2004 Haryana PMT-2000 Manipal-2000**
Beaded Lizard is– **Poisonous Lizard**	**AMU-2011 Haryana PMT-1999 Rajasthan PMT-1996**
Ornithorhynchus is a connecting link between– **Reptiles and mammals**	**KVPY SA-2016 MGIMS Wardha-2014**
The fangs of python which pulled out can– **come again with same length**	**Manipal-2012 AFMC-2002**
Loreal pit in vipers act as– **Thermo receptor**	**Manipal-2011 AP EAMCET-2002**
Snake feed on another snake is– **King cobra**	**J&K CET-2009**
Snake, a terrestrial animal that excretes nitrogen wastes in the form of uric acid is known as– **Uricotelic**	**J&K CET-2014**

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A lizard-like member of Reptilia is string on a tree with its tail coiled around a twig. This animal could be– **Chamaeleon showing protective colouration**	**Rajasthan PMT-2010**
Post anal tail can be traced in– **Cobra**	**AMU-2011** **CMC Ludhiana-2008**
Anapsida sub - classes of Reptile the skull has a– **Solid roof**	**VMMC-2006 / AMU-2007**
Teeth are absent in– **Turtle**	**CG PMT-2007**
Poisonous sea-snakes possesses a– **Compressed tail**	**Uttarakhand-2005** **CG PMT-2009**
The reptilian character of prototheria is– **T-shaped interclavicle**	**AP EAMCET-2001**
Viper venom affects– **Circulatory system**	**AFMC-2004**
Moulting in snakes is done by shedding– **Cornified cells**	**MGIMS Wardha-2011**
The extinct reptiles without temporal fossae belong to– **Cotylosauria**	**Manipal-2009**
Tachyglossus is a connecting link between– **Reptiles and mammals**	**DUMET-2009**
Reptilian feature of Archaeopteryx– **presence of abdominal ribs**	**AP EAMCET-2002**
Uropeltis is a viviparou– **Non-poisonous snake**	**AP EAMCET-1997**
A connecting link demonstrates characteristics of more than one groups. The connecting link between reptiles and mammals is– **Echidna**	**VMMC-2015**
Gynacomastism is characteristic feature of– **Oviparous mammals**	**AP EAMCET-2000**
Kidney of adult reptiles are– **Metanephric**	**AMU-1996**
A snake is identified to be having large hexagonal vertebral and the dorsal surface bluish with narrow white streaks, it is– **Bungarus coeruleus**	**Manipal-2010**
Green parrot does not belong to the order– **Galliformes**	**Haryana PMT-2011**
Sternum is not a characteristic of– **Snakes**	**AMU-2003**
Cleidoic eggs are found in– **Few reptiles**	**CMC Ludhiana-2011**
Regeneration of tail in lizard is an example of– **Epimorphosis**	**Manipal-2002**
A snake is identified to be having large hexagonal vertebrals and the dorsal surface bluish with narrow white streaks, it is– **Bungarus coeruleus**	**AP EAMCET-2006**
The characteristics of class Reptilia are– **Body covered with dry and cornified skin scales over the body are epidermal they do not have external ears**	**NEET (Karnataka)-2013**
Reptiles like mammals originated in– **Triassic**	**AIPMT-1999**
Syndactyly, prehensile tail and long protrusible tongue are the unique features of–	**Karnataka CET-2008**
An arrow mark (↑)is present on the head is not related to– **Indian chain viper**	**AP EAMCET-2013**
The extinct reptiles without temporal fossae belong to– **Cotylosauria**	**AP EAMCET-2009**
A four chambered heart is not found in– **Snake**	**Karnataka CET-2004**
Aves / Birds	
Sound box of birds is called– **Syrinx**	**Rajasthan PMT-2011** **Haryana PMT-2002** **AIPMT-1992 / AMU-2014** **BVP-2001**
In birds the B-Iymphocytes mature in– **Bursa of fabricius**	**AP EAMCET-2001** **AP EAMCET-12.07.2022 Shift-II**
Neophron bears hollow and– **Pneumatic long bones**	**NEET-2021**
Urinary bladder is absent in– **Aves**	**AP EAMCET-03.09.2021 Shift-I** **AMU-2002**
The vertebrate group of animals characterized by crop and gizzard in its digestive system is– **Aves**	**NEET-2018**
The major excretory product of birds is– **Uric acid**	**KVPY (SA)-05.11.2017**
Life span of parrot is– **140 years**	**AIIMS-2011**
National bird of India is– **Pavo cristatus**	**AIIMS-2009** **Rajasthan PMT-2000**
Delicate hair-like feathers which remain sparsely distributed over the body are– **Filoplumes**	**AIIMS-2009**
Lizard and crow are– **Uricotelic animals**	**AIIMS-2002**
Bird vertebrae are– **Heterocoelous**	**AIPMT-1988 / AIIMS-1999**

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Feet of kingfisher are modified for–	**Wading**	**AIPMT-1988 Punjab MET-2011**
Both male and female pigeons secrete milk through–	**Crop**	**AIPMT-1988**
Flight muscles of bird are attached to–	**Keel of sternum**	**AIPMT-1989 J&K CET-2001**
Penguin occurs in–	**Antarctica**	**AIPMT-1990**
Flightless birds is common between–	**Ostrich, Penguin and Kiwi**	**AIPMT-1993**
The skull of a bird is–	**Mono condylic**	**Punjab MET-1999**
Some vertebrae in birds fuse to form–	**Synsacrum**	**AFMC-2005**
Birds maintains high and constant body temperature such as–	**Mammals**	**AFMC-2005**
The red jungle fowl is–	**Gallus gallus**	**AMU-2015**
Exoskeleton of feathers is the most important characteristic feature of–	**Birds**	**BVP-2010**
The scientist, who described the birds as glorified reptiles, was–	**Huxley**	**JIPMER-2004 Punjab MET-2003**
Incomplete division of egg during cleavage is known as–	**Meroblastic**	**JIPMER-2004 Punjab MET-2003 MP PMT-1996,1999**
Beak is toothed in–	**Archaeopteryx**	**MGIMS Wardha-2007 Rajasthan PMT-2006 BVP-2012**
Pigeon is a–	**Oviparous organism**	**J&K CET-2014**
Synsacrum of fowl consists of about–	**16 vertebrae**	**UP CPMT-2008 Uttarakhand PMT-2008 VMMC-2012**
Characteristic features such as four-chambered heart, feather and pneumatic bone is applicable to the class of vertebrate–	**Aves**	**CG PMT-2007 J&K CET-2006**
The bird without pecten is–	**Apteryx**	**AP EAMCET-2004**
The largest endangered bird in India is–	**Great Indian bustard**	**CG PMT-2009 Haryana PMT-2009**
The long bones are hollow and connected by air passage. These are characteristic of–	**Aves**	**AMU-2006**
Quill feathers at the base of quill wings are called–	**Coverts**	**DUMET-2001**
Feathers seen only in Nestlings–	**Down**	**AP EAMCET-2002**
Bone marrow is absent in the bones of–	**Aves**	**CMC Vellore-2014 BCECE-2007**
Meroblastic segmentation is found in–	**Owl**	**Rajasthan PMT-2000**
Scales and claws sets of derivatives of integumentary structures characterise birds as–	**Glorified reptiles**	**AMU-2003**
Bufo is not a–	**Bird**	**J&K CET-2004**
Pneumatic bones are expected to be found in–	**Pigeon**	**JIPMER-2010, AFMC-2000**
Viviparity is not shared by–	**Birds and Mammals**	**NEET-2016 Phase-I**
Indicates their reptilian ancestry in bird is–	**Scales on their hind limbs**	**AIPMT-2008**
Mammalia		
Presence of diaphragm is a very unique feature of the–	**Mammalian body**	**JCECE-2015, Punjab MET-2006 AIPMT-2004 / JCECE-2003 Rajasthan PMT-2002 AIIMS-1998**
In rabbit, head of epididymis present at the head of the testis is called–	**Caput epididymis**	**UP CPMT-2012 MGIMS Wardha-2008 BVP-2007 / CG PMT-2008**
Whales and Bats are–	**Viviparous**	**HP CET-2011 / BCECE-2006 VMMC-2005 / AMU-2004**
Mammary glands are modifications of–	**Sweat glands**	**TS EAMCET 10.05.2023 Shift-I**
Rats belong to the class–	**Mammalia**	**AP EAPCET-22.05.2023, Shift-II**
The unique mammalian characteristics are–	**Hairs, pinna and mammary glands**	**NEET (UG) 07.05.2023**
In mammals, dentition is–	**Thecodont, heterodont and diphyodont**	**AP EAMCET-12.07.2022 Shift-II**
The smallest mammal is–	**Hog Nose Bat**	**AP EAMCET-03.09.2021 Shift-II**
Kangaroo is a–	**Metatherian mammals**	**AP EAMCET-25.09.2020 Shift-II**
Structure analogous to the placenta in mammals–	**Chorion**	**JIPMER-2019**

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The amnion of mammalian embryo is derived from– **Ectoderm and mesoderm**	NEET-2018
Lamprey does not come under the– **Class mammals**	AIIMS-2007
Homodont type of dentition is not– **Mammalian character**	AIIMS-2016
All mammals without any exception are characterized by– **A muscular diaphragm and milk producing glands**	AIIMS-2006
The longest gestation period has– **Elephant**	AIIMS-2010
They have seven cervical vertebrate is common among– **Mammals**	AIIMS-2014
Premolar and molar teeth are– **Lophodont**	AIIMS-2002
Haversian canal in the bone of mammals are connected by small blood vessel canal called– **Volkmann's canal**	AIIMS-2015
Hair occur in all mammals except those of– **Cetacea**	AIPMT-1988
Eutherians are characterised by– **True placentation**	AIPMT-1989
An egg laying mammal is– **Platypus**	J&K CET-2005 AIPMT-1992
Role of spleen in mammal is– **to act as haemopoietic tissue**	Punjab MET-2009
The eggs of eutherian mammals are– **Microlecithal type**	MGIMS Wardha-2003
Presence of diaphragm is a very unique feature of the– **Mammalian body**	Manipal-2007
Ornithorhynchus is an example of– **Monotreme mammal**	WB JEE-2009
The snow leopard is– **Panthera uncia**	AMU-2015
Mammals having traits of both reptiles and mammals are– **Monotremes**	BVP-2010
Echolocation is found in– **Bat**	UP CPMT-2003
Milk glands are characteristics of– **Mammals**	Manipal-2013, 2011 Haryana PMT-1999
Spider monkey has– **Prehensile tail**	AFMC -2011
Blood platelets are found only in the blood of– **Mammals**	Manipal-2004
An egg laying mammal is– **Ornithorhynchus**	J&K CET-2008
The largest corpuscle in mammalian blood are– **Monocytes**	HP CET-2011
Camel in its hump stores– **Fat for emergency**	HP CET-2011
The first animal domesticated by primitive man was– **Dog**	JIPMER-2003
In male mammals primary germ cell is formed by– **Germinal epithelium**	Rajasthan PMT-1998
In mammals, the lower jaw is made of– **Mandible**	VMMC-2006
Mammalian thymus is mainly concerned with– **Immunological functions**	UP CPMT-2008
The part where fertilization of ovum takes place in rabbit, humans and other placental mammals is– **Fallopian tube**	UP CPMT-2001
In mammals, the brain centre, which regulates body temperature, is situated in– **Hypothalamus**	UP CPMT-2001
Sub class Prototheria is related with egg laying mammal such as– **Echidna**	Manipal-2000
Diaphragm is found in– **Kangaroo**	Manipal-2013
Haversian system is diagnostic feature of– **Mammalian bones**	AMU-2008
Ancestors of mammals belong to– **Therapsida**	AMU-2008
Besides bats, echolocation also occurs in– **Whales and dolphins**	AMU-2008
The bone of a mammal contains Haversian canals which are connected by transverse canals called as– **Volkmann's canal**	Haryana PMT-1999
Suckling the young by both male and female parents is observed in– **Ornithorhynchus**	AP EAMCET-2001
Mammary glands are modified– **Sweat glands**	AMU-2005
Presence of a muscular diaphragm is an exclusive character of– **Class mammalia**	CMC Ludhiyana – 2012 Rajasthan PMT - 2010 AMU-2009
Flippers of seal are modified– **Forelimb**	AFMC-2004
Jaws of shark contain– **Acrodont teeth**	AMU-2012
Ten pairs of cranial nerves is not typical of the– **Class-Mammalia**	CG PMT-2006
External ears are characteristics of– **Mammals**	CG PMT-2006
Eggs of egg laying (prototherians) mammals are– **Macrolecithal**	DUMET-2001

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Lower jaw of mammals made up of–	**One bone**	**VMMC-2010**
Ancestors of mammals belongs to–	**Therapsids**	**VMMC-2008**
Prototherians mammals contain more amount of yolk then cytoplasm in their–	**Eggs**	**BVP-2013**
A group of animals having marsupium is–	**Metatheria**	**Rajasthan PMT-2011**
Fertilization of ovum takes place in rabbit, man and other placental mammals in–	**F**	**Rajasthan PMT-2009**
Right systemic arch is absent in–	**Mammals**	**AMU-1996**
The example of oviparous mammal is–	**Echidna**	**AMU-1996**
Salivation in mammals is under the control of–	**Medulla oblongata**	**AMU-1996**
The egg found in monotremata is–	**Macrolecithal**	**HP CET-2012**
Whale is not a–	**Fish**	**VMMC-2003**
In ureotelic animals urea is formed by–	**Ornithine cycle**	**VMMC-2003**
Role of spleen in mammal is–	**to act as haemopoietic tissue**	**Rajasthan PMT-2009 CMC Vellore-2009**
Oviparous mammals are–	**Duck billed platypus**	**BCECE-2002**
In mammals, carbohydrates are stored as–	**Glycogen in liver and muscles**	**BCECE-2003**
Hairless mammals are–	**Cetaceans**	**Haryana PMT-2011**
Zygomatic process in mammals arises from–	**Squamosal**	**AMU-2003**
In mammals, digestion of starch starts from–	**Mouth**	**AMU-2002**
Right lung of rabbit is divided into–	**Four lobes**	**UP CPMT-2009 Punjab MET-2009**
The cavity in the region of diencephalon in the brain of rabbit is called–	**Third ventricle**	**AMU-2005**
meroblastic cleavage occurs in–	**Telolecithal**	**Rajasthan PMT-1998**
Vivipary is found in–	**Rabbit**	**Rajasthan PMT-2004**
The dorsal diverticulum of urethra in male rabbit is–	**Uterus masculinus**	**VMMC-2010**
Zygomatic arch of rabbit is formed of–	**Maxilla, squamosal and jugal**	**UP CPMT-2009 Rajasthan PMT-2009**
Rabbit has–	**Discoidal placenta**	**BCECE-2007**
Ruminants belong to order–	**Artiodactyla**	**JIPMER-2010**
The number of lobes in left lung of rabbit is–	**Two**	**Uttarakhand PMT-2010**
Valve of Thebesius is present in the heart of–	**Rabbit**	**Uttarakhand PMT-2010**
Vas deferens is present in male rabbit but not present in–	**Female rabbit**	**JCECE-2012**
Hormone of the pituitary of the Rabbit controls the protein metabolism and growth of skeleton is–	**Somatotrophic hormone**	**Rajasthan PMT-2002**
Sebaceous gland is associated with fur hairs of–	**Rabbit**	**Rajasthan PMT-2002**
Sertoli cells are associated with–	**Testis of Rabbit**	**Rajasthan PMT-1999**
In rabbit, end of a long bone is connected in another by–	**Ligaments**	**UP CPMT-2012**
The branch of biology, which deals with the study of processes and functions of an organism, is called–	**Physiology**	**BVP-2007**
Vessel in rabbit start with capillaries and ends in capillaries is–	**Hepatic portal vein**	**JCECE-2003 Rajasthan PMT-2002**
The National Aquatic Animals of India is–	**River dolphin**	**NEET-2016 Phase-I**
In mammals the secondary palate is formed by the union of–	**Premaxilla, maxilla and palatine bones**	**AP EAMCET-2008**
The success of mammals on earth is largely because–	**They have the ability to maintain constant body temperature**	**Karnataka CET-2014**
Common among all mammals is–	**Seven cervical vertebrae**	**AP EAMCET-2005**
Lion, deer, dog and cow group of animals, which exhibit–	**Oestrous cycle**	**Karnataka CET-2016**
Palaemon (prawn) is a–	**Crustacean**	**J&K CET-2000**
The locomatory organs in Echinoderms are–	**Tube feet**	**UP CPMT-2012**
Entero coelomate invertebrate is–	**Echinodermata**	**Punjab MET-2004**
Diaphragm is not found in all the–	**Chordates**	**AIPMT-2000**

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05.

MORPHOLOGY OF FLOWERING PLANTS

5.1 The Root

- The stomata in an isobilateral leaf– **Are present on both the surfaces of the epidermis**
- Unicellular elongations of epidermal cells are **- Root hairs**
- Primary root is short lived and new root originated from base of the stem– **Wheat root**
- The supporting roots coming out of lower nodes is maize stem are– **Stilt roots**
- Very fine, delicate, unicellular, thread like structures developed from the zone of root that is proximal to– **Region of cell elongation**
- Cuscuta, Viscum and Orobanche are similar in having– **Haustorial roots**
- Primary root is the direct elongation of the– **Radicle**
- The type of roots present in mustard plant is– **Tap roots**
- In wheat plant ____ root system is present– **Fibrous**
- A root grows in length, _____ of the root is responsible for this growth– **Region of elongation**
- Root hairs are present in/on– **Region of maturation**
- The tap roots of _____ gets modified to store food– **Carrot**
- Adventitious roots of ____ get swollen and store food– **Sweet potato**
- Supporting roots coming out of the lower nodes of the sugarcane stem are called– **Stilt roots**
- In Rhizophora, roots are modified to form– **Pneumatophores**
- Roots play insignificant role in absorption of water in– **Pistia**
- Sweet potato is a modified– **Adventitious root**
- Roots developed from parts of the plant other than radicle are called– **Adventitious roots**
- Edible roots are found in– **Sweet potato**
- The group of plants that possess stilt roots– **Zea mays, Sugarcane**
- That plants of roots are modified for storage– **Turnip, Carrot, Asparagus**
- That feature of distinguish a stem from a roots– **It is the ascending part of axis bearing branches, flower, fruits and leaves**
- Sweet potato is modification of– **Root**
- The roots hanging from the branches of banyan tree are– **Prop roots**
- Prop roots of Banyan tree are meant for– **Providing support**
- Root formed from prolongation of radicle is– **Primary root**
- Primary root is short lived in– **Wheat plant**
- The reason is involved in absorption water and minerals from the soil – **Region of maturation**
- Zone of maturation is adjacent to– **Root hair zone**

5.2 The Stem

- Staminode is– **Sterile stamen**
- The patterns of arrangement of leaves on the stem or branch is known as– **Phyllotaxy**
- Help in preventing water loss due to transpiration- **Trichomes**
- Stem modified into green, flattened branches of unlimited growth for assimilatory function is– **Phylloclade**
- Stem develops from _____ of the embryo of a germinating seed– **Plumule**
- Stems are modified into flattened structures, which carry out photosynthesis in– **Phylloclade (Opuntia)**
- In Pistia and Eichhornia, stems are modified to form– **Offsets**
- An example of edible underground stem is– **Potato**
- In Bougainvillea, thorns are the modifications of– **stem**
- ..... is not a stem modification– **Pitcher of Nepenthes**
- Venation is a term used to describe the pattern of arrangement of– **Veins and veinlets in a lamina**
- The 'eyes' of the potato tuber represent– **Nodes**
- Pumpkin plant to climb is helps– **Tendrils**
- In Opuntia, the function of photosynthesis is carried out– **Stem**
- Bear leaves and branches, storage food and transport of minerals and water is function of - **Stem**
- Stem tendrils are found in– **Cucumber, Pumpkins, Grapevines**
- Modified stem for the protection of plants from browsing animals is– **Thorns**
- Underground parts of some plants spread to new nuches and when older parts die new plants are formed. This condition in seen in– **Grass and strawberry**
- Stem can be observed is fleshy, cylindrical and photosynthetic– **Euphorbia**
- Potato is the modification of– **Stem**

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- In some plants, the lateral branches originate from the basal and underground portion of the main stem, grow horizontally beneath the soil and then come out obliquely upward giving rise to leafy shoots. Examples include– **Banana and pineapple**
- Woody and pointed thorns may develop form axillary buds of stem in– **Cirus, Bougainvillea**
- Stem can be observed is flattened and photosynthetic, that is– **Opuntia**
- In grass, when older parts die, new may develop form underground stem, Same phenomenon can be observed in– **Strawberry**
- Lateral branch originated from stem may arch and touch the ground to give rise to new plants. This is observed in case of– **Mint and jasmine**
- Lateranl branches with short internodes giving rise to roots below and leaves above at nodes are observed in– **Eichhornia, Pistia**
- In one plant, underground stems are modified to store food and in another plant, the stem tendrils develop from axillary buds to help plant climb. They are– **Ginger, Cucumber**
- The stem tendrils are modified axillary buds in– **Cucurbita, Opuntia**

5.3 The Leaf

- The main function of modified leaves in onion is– **Storage of food**
- Leaf base may bear two lateral small leaf like structures called– **Stipules**
- Swollen leaf base found in leguminous plants is called– **Pulvinus**
- ____ plants shows alternate phyllotaxy– **Sunflower**
- The petiole expand and become green to synthesize food in– **Australian Acacia**
- In some ..... , the leaf base may become swollen and is called as– **Legumes, pulvinus**
- Represents the functions of veins in the leaves– **Transport of water and minerals, Mechanical support, Transport of organic food material**
- A simple leaf can be differentiated from the pinnae of a compound leaf on the basis of presence or absence of– **Axillary bud**
- In alternate phyllotaxy, the number of leaves at each node is– **One**
- In ..... phyllotaxy, a pair of leaves arise at each node and lie opposite to each other as in ..... plant– **Opposite, Calotropis**
- The group of plants possessing leaf tendrils and spines respectively– **Pea, Cacti**
- Leaf tendrils are present in– **Pisum**
- Spines present on the areoles of Opuntia represent– **Leaves**
- Represents the edible swollen portion of Allium cepa– **Leaf bases**
- The plant parts in garlic and onion are edible– **Fleshy scale leaves**
- That plant, part is modified into pitcher in pitcher plants– **Leaf**
- A monocot can be distinguished from a dicot by– **Venation**
- Whorled phyllotaxy is present in– **Alstonia**
- Arrangement of leaves on the stem or branch is called– **Phyllotaxy**
- Leaves become modified into spines example of – **Cactus**
- The functions of leaf include- **Cooling, Manufacture of food, Exchange of gases**
- The main purpose of phyllotaxy for the leaves is to provide sufficient– **Light**
- An example of fleshy leaves– **Garlic**
- Arrangement of veins and the veinlets in the lamina of leaf is known as– **Venation**
- The function of the veins of leaf is– **leaf blade, transport water, minerals and food materials**

5.4 The Inflorescence

- Acropetal arrangement of flowers on peduncle and Continuous growth of main axis is identified by - **Racemose inflorescence**
- ____ plant has superior ovary– **China rose**
- Free-central placentation is found in– **Dianthus**
- The ovary is half inferior in– **Plum**
- Many pulses of daily use belong to the family– **Fabaceae**
- In an inflorescence where flowers are borne laterally in an acropetal succession, the position of the youngest floral bud shall be– **Distal**
- A modified shoot wherein the shoot apical meristem changes to floral meristem is known as– **Flower**
- In the gynoecium is present in the topmost position of the thalamus, then the flower is referred to as– **Hypogynous**
- Ovary is said to be half inferior in ..... conditions– **Perigynous**
- In ..... flowers, margin of thalamus grows upward enclosing the ovary completely and getting fused with it– **Epigynous**
- In ..... aestivation, sepals or petals in a whorl just tough one another at the margins, without overlapping, as is found in ---------- **Valvate, Calotropis**
- Monoadelphous condition of stamens, i.e., stamens united into one bunch or one bundle is a characteristic of– **China rose**
- In ..... placentation, a monocarpellary ovary bears a single longitudinal ovule along the junction of two fused margins. **marginal**
- Ovary is one-chambered but it becomes two-chambered due to the formation of false septum in– **Brassica**

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- In racemose type of inflorescence, the main axis– **Continues to grow**
- Inflorescence is– **Arranged on the flowering axis**
- In cymose, flowers are arranged in– **Basipetal order**

5.5 The Flower

- Pair of flowers show bilateral symmetry– **Gulmohar, Bean**
- Carpels are fused it is termed as– **Syncarpous; as in Mustard**
- The type of inflorescence in which the main axis continues to growth– **Flowers are borne in acropetal succession**
- In racemose type of inflorescence– **Main axis does not terminal in a flower**
- Keel is the characteristic feature of flower of– **Indigofera**
- In canna flower, ____ symmetry is present– **Asymmetrical**
- ____ plant is used to extract the blue dye– **Indigofera**
- _____ plant has epigynous flower– **Cucumber**
- Radial symmetry is found in flowers of– **Chilli**
- The flower of _____ plant is zygomorphic– **Bean**
- The flowers are zygomorphic in– **Gulmohar**
- Flower is complete when it has– **Calyx, corolla, androecium and gynoecium**
- A bract is a modified– **Leaf**
- Flower can be divided into two equal radial halves in any radial plane passing through the centre– **Mustard**
- Arrangement of sepals or petals with respect to each other is called– **Aestivation**
- Plays a vital role in attracting insects for pollination– **Petals**
- When gynoecium is present above all parts of flower this condition is called– **Hypogynous**
- When ovules develops on the inner wall of the ovary, the type of placentation is– **Parietal**
- Flowers are zygomorphic in– **Gulmohar**
- Type of aestivation shown by Pisum is– **Vexillary**
- The reproductive unit in the angiosperms is– **Flower**
- Axile placentation shown by– **China rose**
- In monoadelphous condition, stamens - **filaments of all united in one group**
- Normally, the anthers are– **Bilobed**
- In lily, ... stamens are present– **Epiphyllous**
- Symmetry of Datura flowers is similar to that of– **Chilli**
- Epigynous flowers are also knows as flowers with– **Inferior ovary**
- In a flower, withing a whorl, sepals or petals touch each other at margins without overlapping such flower is of– **Calotropis**
- Accessory organs are– **Calyx and Corolla**

5.6 The Fruit

- Sclereids are common found in– **Fruit walls of nuts**
- Fruit of coconut plant is developed from– **Superior ovary**
- Endosperm persists in the mature seeds of– **Most monocots**
- Formation of Persistent and fleshy thalamus in pear is due to - **False fruit**
- The stony hard part of the mango represents– **Endocarp**
- Coconut fruit is a– **Drupe**
- The mature seeds of plants such as gram and peas, possess no endosperm, because– **Endosperm gets used up by the developing embryo during seed development**
- Fibrous layer of coconut is– **Mesocarp**
- Drupe fruit develops from– **Monocarpellary superior ovaries and are one seeded**
- Non-endospermic seeds are found in– **Bean, Pea**
- In endospermic seeds, food is stored in ..... and in non-endospermic seeds, food is stored in ..... **Endosperm, cotyledons**
- Castor possess ..... seeds. **Endospermic**
- Monocotyledonous seeds possess a single cotyledon which is represented by– **Scutellum**
- Coleorhiza and coleoptile are the protective sheaths covering ..... and ..... respectively– **Radicle, plumule**
- ..... is a mature or ripened ovary, developed after fertilization– **Fruit**
- Formation of fruit without fertilization is– **Parthenocarpy**
- Fruit of coconut is– **Drupe**
- Drupes are called stony fruits as they have– **Hard endocarp**
- A fruit that has fleshy mesocarp and stony endocarp is– **Drupe**
- In mango the pericarp is well differentiated into an outer thin 'X', a middle fleshy edible 'Y' and an inner stony hard 'Z'. Identify X, Y and Z– **Epicarp, mesocarp, endocarp**
- Mesocarp is fibrous in– **Coconut,(*Cocos nucifera*)**

5.7 The Seed

- The flower with actinomorphic symmetry, five fused sepals, five united petals, epipetalous stamens, swollen placenta with many ovules and endospermic seed is– **Nicotiana**
- A small pore on seed coat is– **Micropyle**
- The dicot with endospermic seed is– **Castor**
- Shield shaped and large cotyledon of grasses - **Scutellum**
- The inner layer of the seed coat is called– **Tegman**
- ____ plant has endospermic seed– **Caster**
- The placenta is attached to the developing seed near the– **Hilum**
- Endosperm, a product of double fertilisation in angiosperms is absent in the seeds of– **Orchids**

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- A typical monocot seed doesn't have– **Bract**
- Cereals, castor and coconut possesses ..... seeds– **Endospermic**
- Non-endospermic monocot is– **Orchid**
- Scutellum is a part of– **Monocot embryo**
- Scutellum is– **Single shield-shaped cotyledon of cereals**
- In cereals like wheat, rice, etc, seeds are ..... with ..... cotyledon– **Endospermic**
- Nourishment to the developing radicle and plumule is provide– **Scutellum**
- In cereal grain, single cotyledon is represented by– **Scutellum**

5.8 Semi-technical Description of a Typical Flowering Plant

- Ovary is one chambered but it becomes bilocular due to the formation of false septum in– **Parietal Placentation**
- The number of ovules in an ovary, may be one, as in case of– **Wheat and mango**
- Gynoecium is tricarpellary syncarpous with superior ovaries - **Tulips and Gloriosa**
- In _____ placentation, the placenta forms a ridge along the ventral suture of the ovary– **Marginal**
- The four whorls of a flower are arranged on the– **Thalamus**
- Symbols denotes presence of sepals and epiphyllous stamens in flower– $\widehat{P\ A}$
- In floral formula, (K) denotes– **Calyx**
- An aspect of flower shown in floral formula but not in floral diagram is– **Position of ovary**
- In a flower, a superior ovary is represented by– $\underline{G}$

5.9 Description of Some Important Families

- The family with $C_{1+2+(2)}$ arrangement of petals also has carpel with– $\underline{G}_1$
- Placentation is marginal in species having– **Vexillary aestivation**
- A single leaf arises at each node in alternate manner - **China rose, mustard and sunflower**
- Diadelphous stamen, marginal placenta and large posterior petal is concerned with family - **fabaceae**
- Most common fruits of fabaceae and liliaceae are respectively– **Legume and Capsule**
- How many plants among China rose, Ocimum, sunflower, mustard, Alstonia, guava, Calotropis and Nerium (oleander) have opposite phyllotaxy– **Three**
- Tricarpellary, syncarpous gynoecium is found in flowers of– **Liliaceae**
- The term 'polyadelphous' is related to– **Androecium**
- Marginal placentation is generally found in Family– **Leguminosae**
- Floral family has (9) + 1 arrangement of anthers in the androecium– **Fabaceae**
- A plant has a butterfly shaped flower with five petals, one standard, two wings and two keel. The plant belongs to the family– **Papilionaceae**
- Persistent calyx is the characteristic feature of plants belonging to family– **Solanaceae**
- Cymose inflorescence is present in– **Solanum**
- Vexillary aestivation is characteristic of the family– **Fabaceae**
- Lupin belongs to– **Fabaceae**
- Indigofera is a– **Dye**
- Fabaceae was earlier known as– **Papilionoideae**
- Atropine, used for dilating pupil is obtained from Atropa belladona, angiospermic family is– **Solanaceae**
- Gram belongs to the family– **Fabaceae**
- The floral formula of Allium cepa is– $Br \oplus \delta\, P_{(3+3)} A_{3+3}\, \underline{G}_{(3)}$
- The floral formula of Petunia alba is– $\oplus \delta\, K_{(5)} \widehat{C_{(5)} A_5}\, \underline{G}_{(2)}$
- Flower of Fabaceae is– **Complete, zygomorphic, pentamerous**
- Pulses yielding main family of plants is– **Fabaceae**
- Family Solanaceae is– **Pentamerous, bisexual, actinomorphic, hypogynous**

5.10 Miscellaneous

- The mature seeds of plants such as gram and peas possess no endosperm, because– **Endosperm gets used up by the developing embryo during seed development**
- Roots developed from parts of the plant other than radicle are called– **Adventitious roots**
- Venation is a term used to describe the pattern of arrangement of– **Veins and veinlets in a lamina**
- The placenta is attached to the developing seed near the– **Hilum**
- Plants is used to extract the blue dye, that plants is– **Indigofera**
- Plants shows vexillary aestivation and diadelphous stamens– **Pisum sativum**
- The flowers are Zygomorphic in– **Gulmohar, Cassia**
- Diadelphous stamens are found in– **Pea**
- Ray florets have– **Inferior ovary**
- The roots that originate from the base of the stem are– **Fibrous roots**
- The ovary is half inferior in– **Plum**
- Floral formula of Liliaceae is– $Br \oplus \delta\, P_{(3+3)} A_{3+3}\, \underline{G}_{(3)}$
- Placentation in ovules develop on the inner wall of the ovary or in peripheral part, is– **Parietal**
- Pneumatophores occur in– **Halophytes**
- Sweet potato is a modified– **Adventitious root**

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EXAM POINT

Root and Regions of Root	
The zone of least mitotic activity in the root apex is called– **Quiescent centre**	JIPMER-2006, WB JEE-2010 VMMC-2007 MGIMS Wardha-2005 UP CPMT-2005
The types of roots present in mustard plant is– **Tap roots**	SRM JEEE-2018
Root hairs develop from the region of– **Maturation**	NEET-2017
Best material for the study of mitosis in laboratory is– **Root tip**	BVP-2011, AIPMT-2002
Quiescent centre theory was proposed by– **Clowes**	BVP-2005
Roots play insignificant role in absorption of water in– **Pistia**	AIPMT (Re-Exam)-2015
The cells of the quiescent centre are characterised by– **Having light cytoplasm and small nuclei**	AIIMS-2008
The quiescent centre in root meristem serves as a– **Reserve for replenishment of damaged cells of the meristem**	Punjab MET- 2006 AIIMS-2003
Absence of scale leaves and adventitious roots arising from nodes cannot be considered to distinguish underground– **Stem from a root**	MGIMS Wardha-2015
The correct sequence of four zone in a longitudinal section of root, starting from the tip upward is– **Root cap – Cell division –Cell enlargement – Cell maturation**	Manipal-2014 Manipal-2007 AMU-2001
The casparian strips are present in cells of– **Endodermis**	Manipal-2001
The lateral roots originate from– **Pericycle**	Rajasthan PMT-2003, 2006
In T.S. of root– **Metaxylem present inner side and protoxylem in outer side**	Rajasthan PMT-2001
Root pressure is measured by– **Manometer**	Rajasthan PMT-2001
Chicory powder which is mixed with coffee powder is obtained from– **Root**	VMMC-2014 BHU PMT (Screening)-2005
The stimulus for geotropism in roots is perceived by– **Root cap**	BVP-2011
Roots will die first, if the phloem tissue is– **Damaged**	BVP-2011
Quiescent centre possesses– **Meristematic cells**	CMC Vellore-2011
Rafflesia is a– **Total root parasite**	BVP-2009
The apical meristem of the root is present– **In all the roots**	Rajasthan PMT-2007
The structures present in the roots to absorb water and minerals is– **Epidermal extensions**	JIPMER-2013
Pneumatophores are commonly found in– **Mangroves**	BHU PMT-2002 UP CPMT-2006, 2005
The root system growing near the base of the radical in monocots is– **Seminal roots**	Punjab MET-2003
Region of elongation of root is responsible for increase in– **Length of root**	MGIMS Wardha-2014
Maximum amount of growth in root occurs– **Behind the apex**	Manipal-2011
Histogens capping root apical meristem is– **Calyptrogen**	AFMC -2011
Removal of apical (terminal) bud of a flowering plant (or pruning of a flowering plant) leads to– **Promotion of lateral branches**	AFMC-2007
Presence of long tap root system is the specific– **Xerophytic adaptation**	J&K CET-2014
Quiescent centre region lying between– **Meristematic region and root cap**	Manipal-2015
Fibrous roots develop in maize from– **Lower nodes**	Haryana PMT-2011 JIPMER-2000
Coralloid root is the feature of– **Cycas**	BHU PMT (Mains)-2008 AMU-2002
Cuticle is absent in– **Young roots**	DUMET-2009
A fibrous root system is excellent for– **Providing good anchorage for the plant**	DUMET-2009 AMU-2001
If a primary root continues to grow, the type of root system will be known as– **Tap**	DUMET-2009
Inulin crystals found in– **Dahlia root**	Haryana PMT-2011
Root cap is absent in– **Hydrophytes**	HP CET-2013 Haryana PMT-2011 JCECE-2010

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Podostemon plants are all– **Roots**	Haryana PMT-2011 MGIMS Wardha-2011
Zone of cell differentiation part of root absorbs both– **Water and minerals**	AMU-2003
Hygroscopic roots are found in– **Vanda**	AMU-2002
In a woody dicotyledonous tree, parts will mainly consist of primary tissues– **Flowers, fruits and leaves**	JIPMER-2007
Monarch conditions is seen in the roots of a plant having– **Submerged assimilatory roots and spongy petioles**	AP EAMCET-2008
Modification of Root	
Sucking root are present in– **Cuscuta**	Manipal-2010, AMU-2009 Punjab MET-1999, AFMC-2000
Pneumatophores are positively– **Aaerotropic**	HP CET-2011, VMMC-2005 AMU-2004 / BVP-2003
Pneumatophores are found in– **Rhizophora**	Haryana PMT-2004 Manipal-2003, JIPMER-2003 Rajasthan PMT-2000,2001
Roots with negative geotropism for the purpose of oxygen is found in– **Pneumatophores**	AP EAMCET-12.07.2022 Shift-II
The roots that originate from the base of the stem are– **Fibrous roots**	NEET-2020 Phase-I
In *Ipomoea batatas* the food is stored in– **Tuberous root**	MHT CET-2019
General function of the root system is absorption and conduction of water and minerals besides anchoring. But in this case the roots are fibrous and become swollen due to storage of food. The plant is– **Asparagus**	TS EAMCET-08.05.2019 Shift-II
Sweet potato is a modified– **Adventitious root**	NEET-2018, BVP-2002
Pneumatophores occur in– **Halophytes**	NEET-2018
Some plants like Viscum and Striga send roots into the xylem of the host plant to get water and minerals. Such roots are called as– **Haustorial roots**	TS EAMCET-12.05.2017
Coralloid roots in Cycas are inhabited by– **Anabaena**	UP CPMT-2013
The lpomoea batatas (sweet potato) is– **Underground root**	J&K CET-2002
Roots which develop from any part of plants except radical are called– **Adventitious roots**	BVP-2001
The floating roots are found in– **Jussiaea**	BVP-2001
Velamen is present in– **Epiphytic roots**	AIIMS-1998
Velamen present in orchids help in– **Absorption of moisture from air**	AIIMS-2007
Velamen is a specialized tissue found in– **Aerial roots of Orchids**	AIIMS-2002, Manipal-2001 BVP-2000
Radish is a modified root and an example of– **Fusiform root**	J&K CET-2005
Potato is not a product of– **Root**	MP PMT-2013
Parasitic phanerogams absorb water and solutes from the host plant by– **Haustoria**	J&K CET-2010
Respiratory roots (pneumatophores) are present in– **Halophytes**	MGIMS Wardha-2012
Buttress roots are found in– **Terminalia**	Haryana PMT-2000
Asparagus have– **Succulent root**	Punjab MET-2005
In one plant adventitious roots are modified for storage and in the other plant a lateral branch with short internodes and each node bearing a rosette of leaves and a tuft of roots is found. They are– **Sweet potato and Pistia**	Kerala PMT-2014
A root was described as it adventitious root because– **arose from plumule**	VMMC-2007 Rajasthan PMT-2005 UPCPMT-2002
Rhizome which grows vertically upwards are– **Root stock**	AFMC-2005
Tuberous roots are found in– ***Ipomoea batatas***	Manipal-2004 Uttarakhand PMT-2004 AMU-2005
Breathing roots are found in– **Rhizophora and Avicennia**	BHU PMT (Mains)-2011
Fibrous root system is better adapted than tap root system for– **Anchorage of plant to soil**	BHU PMT-2001
The photosynthetic or assimilatory roots are observed in– **Tinospora**	J&K CET-2009
The aerial, short and branched roots of an autotrophic plant that provide stability are known as– **Clinging roots**	BCECE-2010 AP EAMCET - 2007

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Dahlia and Asparagus possess– **Fasciculated roots**	AMU-1998
The plant which bears clinging roots is– **Orchid**	UP CPMT-2001, BHU PMT (Screening)-2007, JIPMER-2010
The character found only in halophytes is– **Vivipary**	Haryana PMT-2009
Pneumatophores the respiratory root are characteristic feature of– **Sonneratia, Avicennia and Rhizophora**	VMMC-2014
Stilt roots are reported from– **Wheat, Maize and Pandanus**	Manipal-2013, AMU -2014
Velamen is found in– **Orchids and Vanda**	AMU-2005
The thick roots that hang down from a banyan tree are called– **Prop roots**	BHU PMT, (Screening)-2011 J&K CET-2014
Special kinds of roots called pneumatophores are characteristics of the plants growing in– **Marshy places and salt lakes**	Haryana PMT-2010
In plants growing in marshy saline soils, the major function of roots that grow in the air above is to– **Respire**	AP EAMCET-1997
Root modification means– **Permanent structural changes in the roots**	J&K CET-2007
Dahlia has– **Storage roots**	AP EAMCET-2000
Opuntia is a xerophyte, containing air spaces in the– **Stem and roots**	AP EAMCET-1999
Taeniophyllum has epiphytic features and aerial and flattened photosynthetic roots, without formal organisation of– **Stem and leaves**	Manipal-2010
Thigmotropism is best seen in– **Tendrils**	CMC Vellore-2009
Floating roots are the characteristic feature of– **Jussiaea**	BCECE-2007
Pneumatophores are helpful in– **Respiration**	AMU-2003 MGIMS Wardha-2005
When the root is swollen in the middle and tapers at both ends, it will be called as– **Fusiform root**	AMU-2001
Respiratory roots are found in– **Mangrove plants**	UP CPMT-2005
Sweet potato, Asparagus, Tapioca and Dahlia groups of plants are propagated through– **Underground root**	MGIMS Wardha-2013
Black pepper plant is– **Woody Climber**	Haryana PMT-2008
Stem and its Modification	
The modified stem of Opuntia is– **Phylloclade**	JIPMER-2010, BHU PMT (Screening)-2007 CG PMT-2006, JIPMER-2005 Haryana PMT-2005 BHU PMT-2003, AMU-2001
The underground stem that has contractile roots is– **Corm**	AP EAMCET-2005 VMMC-2010, AFMC-2010 CMC Vellore-2010
Medicinal plant of Solanaceae– **Nicotiana, Datura, Atropa**	TS EAMCET 10.05.2023 Shift-I
Vegetative propagule of Curcuma is– **Rhizome**	AP EAPCET-07.09.2021 Shift-I
The eye of potato is– **Axillary Bud**	AP EAMCET-25.09.2020 Shift-I
The modified parts of cladophylls are– **Branches of limited growth**	TS EAMCET-29.09.2020 Shift-I
Cotyledon is the sink end of the– **Plant**	MHT CET-2019
The 'eyes of potato' are located at the– **Nodes**	MHT CET-2018
In watermelon the spirally coiled stem modifications which help in climbing are developed from– **Axillary bud**	TS EAMCET-02.05.2018 Shift-I
Potato is cultivated by– **Tubers**	BHU PMT-2002
When we peel the skin of a potato tuber, we remove– **Periderm**	Assam CEE-2014
Oxalis is an example for sub-aerial modification of– **Stem**	Kerala PMT-2009
In Opuntia spines are modification of– **Leaf**	AIIMS-2000
Ginger is a stem and a root because it has– **Nodes and internodes**	Haryana PMT-2008 JIPMER-1999, AIIMS-1998
The examples of edible underground stem are– **Ginger, Turmeric, Potato**	AIPMT-2014
Cladode's is a characteristic morphological feature of– **Asparagus and Ruscus**	AMU-1997, AIIMS-2014
Organization of stem apex into corpus and tunica is determined mainly by– **Planes of cell division**	AIPMT-1988 BVP-2008
An underground specialized bud with reduced disk like stem, covered with fleshy leaves is called– **Bulb**	J&K CET-2000

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Part of the plant which is cultured to obtain virus free clones is– **Shoot tip**	**JCECE-2007**
Grapevine and pumpkins plants have long slender and coiled stem tendrils developed from– **Axillary buds**	**Kerala PMT-2011**
Ginger multiplies vegetatively by– **Rhizome**	**DUMET-2004**
Stem modified for photosynthetic function by appearing like leaves are known as– **Phylloclade**	**MP PMT-2013**
Cladode is a modification of– **Stem**	**J&K CET-2013**
In sweet pea tendrils are modified– **Leaflet**	**Rajasthan PMT-2002**
Turmeric, a commonly used colorant and antiseptic is taken from part of the plant– **Stem**	**Haryana PMT-2001**
Monotropa is not an– **Insectivorous plant**	**J&K CET-2010**
Stem is reduced in– **Bulb**	**BHU PMT (Mains)-2007**
Pseudostem develops in– **Banana**	**BVP-2011**
A tree that has strong erect stem with hollow internodes and solid nodes is known as– **Culm**	**J&K CET-2011**
Stem tendrils are seen in– **Cucumber and Pumpkins**	**Kerala PMT-2013**
Crocus (kesar) is– **Dried red stigma**	**JCECE-2015**
Hydrophytes are characterised by– **Delicate and mucilagenous stem**	**MGIMS Wardha-2003**
The interxylary phloem is found in the stem of– **Calotropis**	**JIPMER-2013**
Cotton fibre is basically a– **Cellulose**	**WB JEE-2010**
Pruning help in making the hedge dense– **It frees axillary buds from apical dominance**	**JCECE-2009**
The plants introduced from the new world to the old world are– **Maize, Tobacco,Potato**	**BHU PMT (Mains)-2009**
Zingeber officinale is a– **Modified stem**	**UP CPMT-2012**
The aerial vertical stout part of the banana is formed the– **Leaf sheaths**	**JIPMER-1999**
Green leaf-like modified aerial stems/branches with a single internodes are called– **Cladodes**	**Karnataka CET-2003**
Viscum is a– **Partial stem parasite**	**AFMC-2004**
Corm is an– **Underground swollen stem**	**MGIMS Wardha-2011**
A horizontal underground stem is a– **Rhizome**	**DUMET-2009**
Thorns which help in climbing are found in– **Bougainvillea**	**AP EAMCET-2000**
Ginger plants does the stem performs the function of– **Storage and perennation**	**CMC Vellore-2014**
Dahlia is propagated through– **Roots and Stem**	**BCECE-2009**
Passiflora is an example of– **Stem tendril**	**Haryana PMT-2011**
Phyllode is present in– **Australian Acacia**	**AIPMT (Screening)-2012**

Leaf and types of Leaf and its Modification

A plant has different types of leaves, the condition is known as– **Heterophylly**	**BVP-2014, VMMC-2005 AMU-2004, BVP-2003**
In a dorsiventral leaf the position of xylem– **Xylem is towards adaxial epidermis**	**AP EAPCET-23.05.2023, Shift-II**
The ability of plants to follow different pathways in response to environment leading to formation of different kinds of structures is called– **Plasticity**	**NEET (Re-Exam)-04.09.2022**
The side of flower facing the mother axis is called– **Posterior side**	**AP EAMCET-03.09.2021 Shift-II**
Integuments are absent in– **Loranthus**	**AP EAMCET-03.09.2021 Shift-II**
Strobilanthes kunthiana flowers once in– **12 years**	**AP EAMCET-03.09.2021 Shift-II**
A student observes grass and Hibiscus plants in his garden during noon. To his surprise, only the leaves of grass were found rolled inwards. The reason could be– **presence of Bulliform cells in the grass leaves**	**Karnataka CET-2020**
Hydathodes anatomical structures is involved in– **Guttation**	**KVPY SA-2019**
In Bougainvillea thorns are the modifications of– **Stem**	**NEET-2017**
A leafy vegetable which has ochraceous stipules– **Rumex**	**AP EAMCET-2002**
The leaf less stem of onion which is produced to bear flower is called– **Scape**	**AFMC-2006**

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Unifacial leaves are found in–	**Allium**	**AP EAMCET-2000**
Bract is a modified–	**Leaf**	**Rajasthan PMT-2009 Punjab MET-2009 CMC Vellore-2009**
The common feature in both Balanophora and Casuarina is–	**Scale leaves**	**AP EAMCET-1999**
Lenticels is absent in a–	**Leaf**	**BCECE-2008**
The number of stomata present per cm^2 of leaf is–	**1000 to 60000**	**AMU-2003**
Sunken stomata are found in plant–	**Nerium (Xerphytes)**	**AIPMT-2001, AMU-2009**
A compound leaf which appears as simple leaf due to the suppression of one or two leaflets is found in–	**Citrus plant**	**AP EAMCET-2005**
The modification of petiole, which became specialised structure like leaf and carry out photosynthesis–	**Phyllode**	**UP CPMT-2014**
A mature ligule, having prominent basal portion is called–	**Glossopodium**	**BHU PMT (Mains)-2006**
The bladders of Utricularia and pitchers of Nepenthes are modification of–	**Leaves**	**J&K CET-2004**
The most common type of compound leaves occurring in nature are–	**Decompound**	**UP CPMT-2013**
Stipules remain persistent throughout the whole life of the leaves in–	**Hibiscus**	**UP CPMT-2013**
Bulliform cells are found in upper epidermis of–	**Monocot leaf**	**BVP-2000, AIIMS-1995 Rajasthan PMT-2001**
Perianth is represented by–	**Lodicules**	**UP CPMT-2009 Punjab MET-2009 AP EAMCET-2011**
In gloriosa, the tendrillar part is formed by–	**Leaf apex**	**AIIMS-1996**
Mixed type of sorus is present in–	**Nephrolepis**	**AIIMS-2011**
A leaf is identified by presence of–	**Axillary buds**	**J&K CET-2000**
Leaves of grasses roll and unroll due to presence of–	**Bulliform apparatus**	**JCECE-2006**
Leaves arise from part of plant–	**Node**	**AFMC-2003**
Storage leaves occur in–	**Tulip, Allium**	**WB JEE-2007**
Two chief functions of the leaves are–	**Photosynthesis and transpiration**	**WB JEE-2007**
The leaves of some plants contain crystals of calcium carbonate in epidermal cells, giving appearance that of bunch of grapes are called–	**Cystoliths**	**MGIMS Wardha-2015 Rajasthan PMT-1997,2001**
In tamarind, the pinnate leaf is–	**Paripinnate**	**Punjab MET-2011**
Leaf blade is spinous in case of–	**Argemone**	**Manipal-2005**
Leaf lamina is modified into two toothed jaws in–	**Dionaea**	**Haryana PMT-2001**
The synthesis of florigen occurs in–	**Leaf**	**Rajasthan PMT-1995**
Thigmotropism is best observed in–	**Tendrils**	**BHU PMT (Screening)-2005**
Heterophylly of Limnophila is–	**Adaptive**	**BHU PMT (Mains)-2007**
Cuticle is secreted by–	**Epidermis**	**Rajasthan PMT-2005**
Leaf tendrils are found in–	**Peas**	**AMU-2015**
The spines of cacti are modified–	**Leaves**	**UP CPMT-2010**
The type of leaf in *Daucus carota* is–	**Decompound**	**Uttarakhand PMT -2004 AMU -2005, Manipal-2004**
Thick cuticle on the leaves are typical of plants growing in–	**Dry habitats**	**BHU PMT (Mains)-2009**
In Kalanchoe, the epiphyllous buds producing roots occur on–	**Leaf margin**	**BHU PMT (Mains)-2005**
The leaves are modified into pitcher in–	**Sarracenia**	**BHU PMT (Mains)-2011**
Leaf apex changes into tendril in–	**Sweet peas,Gloriosa plants**	**AFMC-2002, Manipal-2012**
The leaves without petiole are called–	**Sessile**	**AMU-2011**
Goldfussia in which two different size of leaves are found is an excellent example of–	**Anisophylly**	**AMU -2000**
Insectivorous plants usually survive in–	**N_2 deficient soil**	**Manipal-2000**
Swollen and spongy petioles are characteristic of–	**Eichhornia,Trapa**	**AP EAMCET-2003**
Exstipulate leaves are present in–	**Lilium,Tridax procumbens**	**AP EAMCET-2003**
Flowers and lateral branches arise from the–	**Lateral buds**	**HP CET-2012**
Opening of flower is an example of–	**Epinastic movement**	**UPCPMT-2002**

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Venation and Phyllotaxy	
Circinate vernation is found– **Cycas and Fern**	**CG PMT-2007, BVP-2013 MGIMS Wardha-2004 UPCPMT-2002**
The reason for the similar size of vascular bundles in Monocot leaf– **Parallel venation**	**AP EAPCET-22.05.2023, Shift-I**
Frequency of recombination between gene pairs on same chromosome as a measure of the distance between genes to map their position on chromosome, was used for the first time by– **Alfred Sturtevant**	**NEET (UG) 07.05.2023**
The pattern of arrangement of leaves on the stem is known as– **Phyllotaxy**	**J&K CET-2014**
120^{o} phyllotaxy is found in– **Tristichous**	**Manipal-2015**
Circinate vernation in leaves is caused due to– **Hyponasty**	**BHU PMT (Screening)-2011**
Alternate phyllotaxy in which the sixth leaf lies above the first leaf after completing two circles is known as– **Pentastichous**	**AP EAMCET-2002 AMU-2008, VMMC-2008**
The leaves of *Smilax* and *Colocasia* show– **Reticulate venation**	**Haryana PMT-2003**
Gold fussia plants exhibits an example of anisophylly, where the different size of leaves are present in– **Opposite Phyllotaxy**	**AMU-1995, 1996, 2000**
Whorled, simple leaves with reticulate venation are present in– **Alstonia**	**AIPMT (Mains)-2011 NEET (Odisha)-2019**
Multicostate parallel type of venation is found in the leaves of– **Grasses and palms**	**Kerala PMT-2009**
The reticulate venation is commonly found in the leaves of– **Dicot plants**	**J&K CET-2005**
Inflorescence and its type	
Catkin inflorescence is characteristic of– **Morus (Mulberry)**	**MGIMS Wardha-2011 Haryana PMT-2011 Rajasthan PMT-2011 JIPMER-2011**
Chromosome with the fewest genes in human beings is– **Y - chromosome**	**TS EAMCET-11.05.2023, Shift-II**
The part of cauliflower which is eaten is– **Inflorescence**	**Assam CEE-2014 AFMC-2005, Uttrakhand-2005 AIIMS-2000 Rajasthan PMT-1995**
The inflorescence in which the flowers arise from same point of the peduncle and covered by a whorled of bracts– **Umbel**	**AP EAPCET-12.07.2022 Shift-I**
Ray florets have– **Inferior ovary**	**NEET-2020 Phase-I**
Verticillaster inflorescence is found in– **Labiatae (Ocimum)**	**JIPMER-2019**
Edible part of mango is– **Mesocarp**	**HP CET-2018**
The water of coconut is– **Liquid endosperm**	**HP CET-2018**
Sunflower is not a flower, but it is king of inflorescence called – **Capitulum**	**HP CET-2018**
The inflorescence found in jasmine is a– **Cymose**	**TS EAMCET-02.05.2018 Shift-I**
Centripetal, Acropetal and irregular arrangement of sessile flowers are seen in the inflorescences of these plants respectively– **Carrot, Colocasia and Euphorbia**	**AP EAMCET-25.04.2018 Shift-II**
An inflorescence which contains gall flowers is– **Hypanthodium**	**AP EAMCET-2001 AMU -2000 Rajasthan PMT-2000**
The type of inflorescence in Tulsi– **Verticillaster**	**CG PMT-2006**
In Musa, inflorescence is– **Spadix**	**WB JEE-2006, BCECE-2003**
Umbel inflorescence is found in– **Coriander**	**Uttarakhand PMT-2004 Manipal-2004**
The florets in capitulum of sunflower are arranged in– **Centripetal manner**	**BHU PMT (Mains)-2005**
The type of inflorescence where in the main axis has limited growth and ends in a flower is termed– **Cymose**	**JIPMER-1999**
Capitulum inflorescence is found in– **Compositae (Asteraceae)**	**MGIMS Wardha-2004 Haryana PMT- 2003**
The morphological nature of the organ, which helps in climbing in Cardiospermum is– **Inflorescence axis**	**AP EAMCET-2003**
Inflorescence axis is called– **Peduncle**	**Haryana PMT-2007**
An inflorescence in which flowers arise from different points but reach the same level is known as– **Corymb**	**Manipal-2015**

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In a spadix inflorescence spathe encloses– **Spike of flower**	JIPMER-2000
Elongated peduncle bearing pedicellate flower continuously in acropetal order is– **Raceme**	AMU-2008
The flowers in a cyathium resemble the ray florets of sunflower in being– **Imperfect**	AMU-1997
The most highly evolved and perfect type of inflorescence is– **Capitulum**	AMU-1997
In general, the feature common to the flowers of spadix, cyathium and hypanthodium is that they are– **Diclinous**	AMU-1997
Edible part of the apple is– **Thalamus**	AMU-2009
In cyathium inflorescene the ratio between male and female flowers is– **Many : one**	AP EAMCET-2002, 1997
Inflorescence is edible in Brassica oleracea– **var. botrytis**	VMMC-2008, AMU-2008
Scorpioid cyme is seen in– **Gossypium, Heliotropium**	J&K CET-2007
A racemose type of inflorescence with its main axis almost flat is called– **Capitulum**	Rajasthan PMT-2011 J&K CET-2005
Modification of bract in Typhonium is– **Spathe**	AP EAMCET-1999
Inflorescence in Jatropha is– **Dischasial cyme**	AP EAMCET-1999
Rhipidium inflorescence in Solanum nigrum is modification of– **Scorpioid cyme**	Haryana PMT-2011
The fleshy receptacle of syconus of fig encloses a number of– **Achenes**	JIPMER-2012
Cymose inflorescence is present in– **Solanum**	AIPMT (Screening)-2012
Inflorescence is racemose in– **Soyabean, Wheat, Mustard**	NEET (Karnataka)-2013
In a cymose inflorescence the main axis terminates in – **A flower**	NEET (Karnataka)-2013
The ovary is half inferior in flower of– **Peach**	AIPMT (Screening)-2011
Flowers are Zygomorphic in– **Gulmohar**	AIPMT (Screening)-2011
The type of inflorescence in a plant showing polygamous condition and lateral style is– **Compound corymb**	AP EAMCET-2013
A taxon belonging to order sapindales has a single fleshy fruit with edible mesocarp and stony endocarp. The number of carpels in the flower of this taxon is– **1**	TS EAMCET-2015
The characteristic inflorescence of family - Asteraceae is– **Capitulum**	UP CPMT-2013
Inflorescence with unisexual sessile flower is– **Catkin**	J&K CET-2002, AMU-2014
The type of arrangement of flower and mode of distribution of flower on a shoot of palm tree is– **Compound spadix**	CMC Vellore-2013
Inflorescence of Liliaceae is– **Actinomorphic and Trimerous**	AIIMS-2011
The most advanced type of inflorescence is– **Capitulum**	WB JEE-2007
Cyathium is a type of– **Inflorescence**	Manipal-2001
In a plant the peduncle is elongated and it bears pedicillate flowers. The older flowers lie towards the base and the younger ones near the apex. The growth of the peduncle continues and more flowers are added. The inflorescence is– **Raceme**	BCECE-2012 J&K CET-2003
The inflorescence found in Ficus is known as– **Hypanthodium**	Punjab MET-2004
Hairs are found in the inflorescences of *Zea mays* are the modification of– **Style**	AIPMT-2000

Flower and Symmetry of Flower

Opening of floral bud is known as– **Anthesis**	JCECE-2009, AFMC-2008 MGIMS Wardha-2007 Manipal-2007
A flower which can be divided into two equal halves by using only plane is– **Zygomorphic (Pea)**	VMMC-2015, WB JEE-2011 J&K CET-2002 Rajasthan PMT-2001
Example for asymmetric flower– **Canna indica**	TS EAMCET 10.05.2023 Shift-I
The plant characterized by trimerous flowers, superior and trilocular ovary with axile placentation is– **Yucca gloriosa**	AP EAPCET-22.05.2023, Shift-II
Axile placentation is observed in– **China rose, Petunia and Lemon**	NEET (UG) 07.05.2023
The ovary is half inferior in– **Plum**	NEET-2020 Phase-I
The term 'polyadelphous' is related to– **Androecium**	AP EAMCET-25.09.2020 Shift-II

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Pea, Bean, Cassia, Gulmohar represent–	**Zygomorphic symmetry**	**AIIMS-25.05.2019 Shift-II Rajasthan PMT-2011**
Radial Symmetry is found in the flowers of–	**Brassica**	**Tripura JEE-2017 NEET-2016 Phase-II**
Inferior ovary is found in–	**Cucumber**	**Tripura JEE-2017 UP CPMT-2013**
In a flower of a plant the number of carpels is equal to the number of inner whorl of perianth lobes and cotyledons 1/3 of carpel number. The arrangement of ovules on placenta of the flower of that plant is–	**Axile**	**TS EAMCET-2015**
Anemophilous flowers have–	**Large and feathery stigma**	**WB JEE-2006 BHU PMT-2001**
Tepals is present in–	**Monocot flowers (tulips)**	**BVP-2012 MGIMS Wardha-2007**
When gynoecium is present in the topmost position of thalamus, the flower is known as–	**Hypogynous condition**	**Uttarakhand PMT-2004 Manipal-2004, AMU-2005**
The smallest flower is that of the–	**Wolffia microscopia**	**JIPMER-1999**
The order of opening of flower parts from the periphery towards the centre is called–	**Centripetal**	**J&K CET-2009**
Opening of floral buds into flowers is a type of–	**Autonomic movement of growth**	**Rajasthan PMT-2010**
Cleistogamous flowers are–	**Never open and show self- pollination**	**AMU-2011**
There are certain plant species, which flowering occurs only once in their life span. This condition is named as–	**Monocarpic**	**Uttarakhand PMT-2009 AMU -2000**
Bambusa vulgaris is a–	**Monocarpic tree**	**Karnataka CET-2003**
Empty glumes are considered–	**Bracts**	**AMU-2007**
Clove the commonly used spice is obtained from the parts of plant–	**Flower bud**	**VMMC-2014**
Zygomorphy is an advanced–	**Floral feature**	**AP EAMCET-2001**
Umbel inflorescence is found in–	**Coriandrum**	**AMU-2005**
Floral diagram fails to indicate–	**Position of ovary on the thalamus**	**AMU-1997**
Largest flower is–	**Rafflesia arnoldii**	**AMU-2009 BHU PMT(Screening)-2005**
A hyaline bisexual and self-fertilized flower that does not open at all is–	**Cleistogamous**	**MGIMS Wardha-2009**
Syngenesious condition means–	**Fused anthers and free filaments**	**AMU -2011, 2000 BHU PMT (Screening)-2011**
Elongated peduncle bearing pedicellate flower continuously in acropetal order is–	**Raceme**	**VMMC-2008**
Spathe is present in the flowers of–	**Banana**	**Rajasthan PMT-2011**
Epigynous flowers are present in–	**Cucumber**	**Rajasthan PMT-2011 JIPMER-2011**
Keel is the characteristic feature of flower of–	**Indigofera**	**AIPMT-2015**
Night flowers are mostly–	**White**	**BCECE-2015**
A flower which can be divided into equal vertical halves by more than one plane of division is–	**Actinomorphic**	**J&K CET-2004**
The maize plant is monoecious and the flowers are–	**Unisexual**	**Uttarakhand PMT-2011**
When the flower is regular and radially symmetrical, it is called–	**Actinomorphic**	**UP CPMT-2013**
National flower of India is–	**Lotus**	**BVP-2000**
In china rose the flowers are–	**Actinomorphic, hypogynous with twisted aestivation**	**NEET-2013**
The flower in which the gynoecium occupies the highest position on the thalamus leaving other parts below is called–	**Hypogynous**	**J&K CET-2005**
A scorpioid cyme having all the flowers in the same plane is–	**Rhipidium**	**AMU-2014**
Plants who flowers single time in their life cycle is known as–	**Monocarpic**	**Rajasthan PMT-1999**
Bracts enclosing a cluster of flowers are known as–	**Involucre**	**Rajasthan PMT-2003**
Study of flower is called–	**Anthology**	**Rajasthan PMT-2001**
Cleistogamous flowers are–	**Bisexual flowers which remain closed**	**WB JEE-2014**
Gall flowers of figs are–	**Neutar**	**CMC Vellore-2011**
In guava, cucurbits flowers are–	**Epigynous**	**WB JEE-2008**

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In floral formula K denotes–	**Calyx (Sepals)**	**WB JEE-2008**
The arrangement of the ovules on the placentae developed from the central axis of the ovary is called–	**Axile placentation**	**J&K CET-2005**
The glumes are modified form of –	**Bracts**	**MP PMT-2013 Haryana PMT-2011**
Perigynous flowers are found in–	**Rose**	**AIPMT-2015 Manipal-2010**
The example for trimerous, unisexual flowers is–	**Cocos nucifera**	**Karnataka CET-2004**
Part of Flower		
Stalk of the stamen is–	**Filament**	**Karnataka CET-2022**
In floral formula, 'K' and 'C' stands for–	**K - calyx, C - corolla**	**AP EAMCET-03.09.2021 Shift-II**
When the stamens remain united with petals, then it is called–	**Epipetalous**	**Tripura JEE-2021**
In angiospermic flowers, the filament of stamen is attached to the anther by–	**Connective tissue**	**MHT CET-04.10.2020 Shift-I**
The pollen grains are develop in anther during microsporogenesis–	**Sporogenous**	**GUJCET-2018**
Monadelphous condition of stamens is found in–	**China Rose**	**Tripura JEE-2018 AMU-2015 Rajasthan PMT-1997**
Example for a monadelphous androecium is–	**Crotalaria**	**TS EAMCET-02.05.2018 Shift-I**
Intercalary meristem occurs in–	**Mint and grasses**	**J&K CET-2004**
The plant which is not having unilocular ovary is–	**China rose**	**TS EAMCET-2015**
The family that perianth is reduced to lodicules in–	**Poaceae**	**Uttarakhand PMT-2011**
Persistent calyx forming a cover around the fruit is found in–	**Withania somnifera**	**Uttarakhand PMT-2006**
An ovule that becomes curved so that the nucellus and embryo sac lies at right angles to the funicle is–	**Hemitropous**	**AIPMT-2004**
Pappus is modified form of–	**Calyx**	**BHU PMT (Screening)-2005 JIPMER-2010**
Trimerous flower, superior ovary and axile placentation is characteristics of–	**Liliaceae family**	**JIPMER-2010**
Free-central placentation is found in–	**Dianthus**	**NEET-2016 Phase-II Rajasthan PMT-2011**
The term 'polyadelphous' is related to–	**Androecium**	**NEET-2016 Phase-II**
Bract is a modified–	**Leaf**	**UP CPMT-2009**
Long filamentous threads protruding at the end of a young cob of maize are–	**Styles**	**AIPMT-2006**
The direction of micropyle in anatropous ovule is–	**Downward**	**AIPMT-2002**
When the filament runs along the back of anther, it is called–	**Adnate**	**AIIMS-2002**
Clove is a part of–	**Flower bud**	**AIIMS-2001**
Saffron or kesar is extracted from–	**Top of the style and stigma**	**J&K CET-2000**
The condition in which gynoecium occupy lower position while other flower parts are situated on or above thalamus, the flower is termed as–	**Epigynous**	**BVP-2014 Uttarakhand PMT-2006**
The example for polypetalous, zygomorphic corolla is–	**Crotalaria**	**Karnataka CET-2001**
Role of calyx and corolla in fruit formation is–	**Promotory**	**Rajasthan PMT-2003**
The edible part of cauliflower is–	**Inflorescence**	**UP CPMT-2004**
In some plants, anthers and stigma grow and mature at same time. This phenomenon is called–	**Homogamy**	**AFMC-2005**
The thorn of water chestnut (Trapa bispinosa) is the modification of–	**Sepals**	**Rajasthan PMT-1996**
The nature of a fruit developing from a flower depends on the type of–	**Gynoecium**	**Karnataka CET-2002**
The expression gynoecium is apocarpous implies that the–	**Ggynoecium comprises more than one carpel which are free from each other**	**DUMET-2010**
A funnel shaped stigma is found in–	**Crocus**	**AMU -2000**
If both the anthers and filaments are fused together to form a compact structure with sigmoid appearance the condition is termed a–	**Synandrous**	**AMU -2000**
Boat shaped anterior petal in garden pea is called–	**Carina or Keel**	**HP CET-2013 Haryana PMT-2001**

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Heterospory, seed habit is often exhibited by a plant possessing– **Bract**	HP CET-2013 Haryana PMT-2000
Number of carpels in Sida cordifolia is always– **Equal to the number of locules**	AP EAMCET-2003
Unisexuality floral characters, is shared by Ruscus and ray florets of– **Tridax**	AP EAMCET-2003
The location/position of the multilayered sterile tissue in the transverse section of a young anther is– **Between tapetum and endothecium**	VMMC-2014
Gynobasic style is found in– **Labiatae (Ocimum)**	JIPMER-2000
Diadelphous condition is found in– **Fabaceae (Pisum)**	JIPMER-2001
The position of the odd sepal in Caesalpiniaceae is– **Anterior**	AP EAMCET-2001
When margin of thalamus grows upward enclosing ovary completely and getting fused with it and the other parts of flower arise above the ovary, the flower is said to be– **Epigynous**	AMU-2012
In obdiplostemonous androecium the stamens are arranged in– **Two whorls with outer whorl opposite to the petals**	AP EAMCET-2002
In a population of a species, in some plants the style is shorter, but in some others it is longer than the stamens. This conditions is called– **Heterostyly**	AP EAMCET-1997
A stalk like structure found above the stamens and below the ovary is called– **Gynophore**	AP EAMCET-1997
Sepals (Calyx) are modified into wings in the fruits called samaroid. One such example is– **Shorea (sal)**	VMMC-2008
Dispersal of fruits in opium (poppy) occurs through shaking by wind by– **Censor mechanism**	VMMC-2008
The condition in which gynoecium occupy topmost position of thalamus, the flower is– **Hypogynous**	BVP-2013
In Benincasa the condition of androecium is described as– **Synandrous**	AP EAMCET-2000
The term keel is used for special type of– **Petals**	Rajasthan PMT-2011
Polyadelphous stamens are found in– **Lemon**	Rajasthan PMT-2011
Perianth is represented by– **Lodicules**	Rajasthan PMT-2009
Proximal end of the filament of stamen is attached to the– **Thalamus or petal**	NEET-2016 Phase-I
The technical term used for the androecium in a flower of China rose (*Hibiscus rosa sinensis*) is– **Monadelphous**	AIPMT (Screening)-2010
Wearing isolated a dormancy inducing substance from the leaves of a plant. The type of gynoecium does the fruit of that plant develop– **Bicarpellary syncarpous gynoecium with superior ovary**	AP EAMCET-2007
A boat shaped structure of petals and the innermost two petals that are suppresed together is- **Carina**	VMMC-2013

Aestivation

Example for twisted aestivation– **Cotton**	TS EAMCET-10.05.2023, Shift-II
In a pea flower, five petals are arranged in a specialized manner with one posterior, two lateral and two anterior. These are named as _____. _____ and ..... respectively. **Standard, Wings and Keel**	RE-NEET (UG)-06.06.2023 (Manipur)
In Calotropis, aestivation is– **Valvate**	RE-NEET (UG)-06.06.2023 (Manipur)
It shows vexillary aestivation and diadelphous stamens– ***Pisum sativum***	NEET-2022
Verticillaster inflorescence is the characterstic feature of family– **Lamiaceae**	Uttarakhand PMT-2006
Allium plants, pollen is released before the stigma becomes receptive in the– **Same flower**	AP EAMCET-2014
When the margins of sepals or petals overlap one another without any particular direction, the condition is termed as– **Imbricate**	AIPMT-2014
The type of placentation is seen in sweet pea– **Marginal**	Haryana PMT-2006 AIPMT-2006
When the sepals or petals meet by their edges without overlaping the aestivation is– **Valvate**	HP CET-2013, VMMC-2003 Haryana PMT-2001
Cassia is an example for zygomorphic flower with– **Imbricate aestivation**	BCECE-2012
Type of aestivation shown by Pisum is– **Vexillary**	AIPMT (Screening)-2012 J&K CET-2011

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In Dianthus, placentation is–	**Free central**	**AP EAMCET-1999 JIPMER-2011**
The flower of Calotropis has–	**Valvate aestivations**	**J&K CET-2012**
Keel is characteristic of the flowers of–	**Bean**	**AIPMT (Screening)-2010**
Bicarpellary gynoecium and oblique ovary occurs in–	**Brinjal**	**AIPMT-2001**
Tetradynamous conditions occur in–	**Cruciferae**	**AIPMT-2001**
Fruit		
Pome fruit is found in–	**Apple, Pear**	**AIIMS-27.05.2018 Shift-I Karnataka CET-2013 Manipal-2012, J&K CET-2012 UP CPMT-2011 Punjab MET - 2008 MGIMS Wardha-2007**
Aril is the edible part of–	**Litchi**	**Manipal-2012, CG PMT-2011 CMC Ludhiana-2009 JCECE-2009,2013, AI PMT-2006 Uttrakhand -2005, JIPMER-1997 AFMC-2008**
Drupes are called stony fruits because they have hard–	**Endocarp**	**JCECE-2012, AMU-2005 Manipal-2004 Uttrakhand PMT-2004**
Lomentum is a kind of–	**Dehiscent legume fruit**	**Uttarakhand PMT-2007 Uttarakhand-2005, JCECE-2005 Manipal-2000,2002 Punjab MET-2004**
Caryopsis is present in–	**Poaceae family**	**AP EAMCET-25.09.2020 Shift-I JIPMER-2018**
In some plants thalamus contributes to fruit formation. Such fruits are termed as–	**False fruits**	**NEET-2020 Phase-II**
Edible part in 'sorosis', a composite fruit, is–	**Perianth and peduncle**	**Tripura JEE-2018 JIPMER-2010 BHU PMT(Screening) - 2005**
The morphological nature of the edible part of coconut is–	**Endosperm**	**NEET-2017, Manipal-2002**
Coconut fruit is a–	**Drupe**	**NEET-2017**
In *Pyrus malus*, the false fruit is formed from–	**Thalamus**	**AP EAMCET-2001**
Geocarpic fruit is–	**Peanut**	**AIPMT-2002**
Pepo is a fruit of–	**Cucurbitaceae**	**UP CPMT-2013**
Polygalacturonase promotes softening of–	**Fruits**	**BCECE-2015 Kerala PMT-2008**
Berries, drupes and pomes are–	**Simple succulent fruits**	**J&K CET-2002**
Jackfruit is derived from–	**An inflorescence**	**Assam CEE-2014**
Pineapple (ananas) fruit develops from–	**A cluster of compactly borne flowers on a common axis**	**BHU PMT (Mains)-2010 AIPMT-2006**
Cashew nut is a–	**True nuts**	**JIPMER-2010**
A fleshy-fruit with leathery exocarp is called–	**Hesperidium**	**JCECE-2010**
If a fruit is developed from bicarpellary syncarpus inferior ovary with basal placentation and with a single ovule, the fruit is termed as–	**Cypsela**	**AMU-1995**
An aggregate fruit is one which develops from–	**Multicarpellary apocarpus gynoecium**	**AIPMT-2014**
Placenta and pericarp are both edible portions in–	**Tomato**	**AIPMT-2014**
Juicy hair-like structures observed in the lemon fruit develop from–	**Endocarp**	**Rajasthan PMT - 2007 AIPMT-2003**
Composite fruit develops from–	**Inflorescence**	**AIIMS-2007**
Plants with inferior ovary usually bear–	**Pseudocarps**	**AIIMS-2012**
Coconut's husk fibre coir of commerce is extracted from–	**Mesocarp**	**AIIMS-2001**
Refrigerated fruits maintain flavor and taste for longer period due to–	**Slower rate of respiration**	**AIIMS-2015**
The small projections present on the surface of pineapple fruit represent–	**Persistent bracts**	**AIIMS-2015**

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Fruit of Mangifera indica is–	**Drupe**	**AIPMT-1991**
Mango juice is obtained from–	**Mesocarp**	**AIPMT-1989**
Fruit of groundnut is–	**Legume**	**AIPMT-1988**
Fig is a–	**Syconus**	**BCECE-2015**
The fruit development from the single ovary is said to be–	**Simple type**	**J&K CET-2005**
Gymnospermae taxons is known for the–	**Absence of fruits**	**AP EAMCET-2001**
The fruit that develops from a tricarpellary, syncarpous, inferior ovary with parietal placentation is–	**Pepo**	**AP EAMCET-2004**
A fruit that develops from an inflorescence is called–	**Composite fruit**	**AMU-2002**
From which part of *Cocos nucifera*, coir is obtained–	**Mesocarp**	**Punjab MET-2009** **CMC Vellore-2009** **MGIMS Wardha-2003**
Kattha is obtained from the heart wood of–	***Acacia catechu***	**Manipal-2006**
Seedless banana is–	**Parthenocarpic fruit**	**WB JEE-2009**
In Datura the fruit is–	**Septicidal capsule**	**Punjab MET-1999**
Bicarpellary, syncarpus and with pseudoseptum fruit is–	**Siliqua**	**Rajasthan PMT-2004**
Maize grain is–	**Fruit**	**AFMC-2005**
If a tree flowers thrice in a year in October, January and July in Northern India, the plant is–	**Photo and thermo insensitive**	**BHU PMT (Mains)-2009**
Wheat grain is a–	**Fruit**	**BHU PMT-2001**
The cheapest high energy fruit crop in India is–	**Banana**	**HP CET-2013, JIPMER-1998**
Pome type of fruit is found in–	**Apple and Pear**	**UP CPMT-2012**
Geocarpic fruits are produced by–	**Ground nut**	**Haryana PMT-2010** **AFMC-2007**
Lemon is sour due to the presence of–	**Citric acid**	**AFMC-2002**
Dry indehiscent single- seeded fruit formed from bicarpellary syncarpous inferior ovary is–	**Cypsela**	**BHU PMT (Screening)-2010** **AMU- 2000**
Pear fruits are gritty due to the presence of–	**Sclereids**	**J&K CET-2012**
If a fruit is developed from $\left(\overline{2G}\right)$, bilocular with one ovule in each local and pendulously attached and the wall of the ovary possesses vittae, the fruit is designated as–	**Cremocarp**	**AMU -2000**
The type of fruit that develops from the ovary of a monocarpellate gynoecium and breaks into several one seeded parts at maturity is–	**Lomentum**	**AP EAMCET-2003**
Single seeded winged fruit is called–	**Samara**	**Haryana PMT-2007**
The dried fruit used for making a musical instruments is–	**Bottle gourd**	**CMC Vellore-2014** **Haryana PMT-2007**
Apple is a–	**Pseudocarp**	**Haryana PMT-2009** **CG PMT-2009**
Plants which flower only once in their life are termed as–	**Monocarpic**	**CG PMT-2009**
Winged fruits are found in–	**Dioscorea**	**AMU-2008**
An alkaloid called capsaicin is obtained from this plant–	**Chillies**	**AP EAMCET-2001**
Porous dehiscence of capsular fruits is seen in–	**Poppy**	**AMU-1997**
Explosive fruits are a characteristic of–	**Castor**	**AMU-1997**
Fruit of custard apple is–	**Etaerio of berries**	**AFMC-2004**
Opening and closing of flowers represent a kind of–	**Nastic movement**	**VMMC-2005** **AMU-2004**
Fruit of *Hibiscus esculentus* is–	**Capsule**	**MGIMS Wardha-2011**
The characteristic fruit type in Asteraceae is–	**Cypsela**	**AP EAMCET-2002**
Hesperidium of orange is a modification of–	**Berry**	**Haryana PMT-2006** **DUMET-2006**
In banana, edible part is–	**Mesocarp**	**Haryana PMT-2003** **JCECE-2004** **BHU PMT (Main)-2009**
The capsules are septicidal in–	**Aristolochia (Dutchman's pipe)**	**AP EAMCET-1997**
Botanical name of banana is–	***Musa paradisiaca***	**AFMC-2010**
Bitterness of cucurbits fruit is due to–	**Occurrence of tetracyclic triterpenes**	**CMC Ludhiana-2007**

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Spongy thalamus in lotus and swelling in bordered pits is known as – **Torus**	CMC Ludhiana-2007
Nucellus forms– **Perisperm part of fruit**	BCECE-2008
The grittiness of the pulp guava fruit is due to presence of– **Sclereids**	AMU-2001
Cotyledons and testa respectively are edible parts in– **Groundnut and pomegranate**	AIPMT-2009
Fruits are formed from– **Ovary**	UP CPMT-2005
Placentation in tomato and lemon is– **Axile**	AIPMT (Screening)-2012
A small dry, one – seeded fruit with its pericarp fused with the seed-developing from a monocarpellary gynoecium is called– **Caryopsis**	Rajasthan PMT-2011
Seed and Structure of Seed	
The type of tissue commonly found in the fruit wall of nuts is– **Sclereid**	NEET (Re-Exam)-04.09.2022
That part of the seed is used to protect the seed against mechanical shock, dry conditions etc.– **Testa**	MHT CET-07.10.2020 Shift-I
Some seeds produce various structures like wings, pappus calyx, hooks etc, which help in their– **Dispersal**	MHT CET-06.10.2020 Shift-I
'Scutellum' is the ..... of monocotyledonous plant. **Cotyledon**	Tripura JEE-2019
Persistent nucellus in the seed is known as– **Perisperm**	NEET-2019
Placentation in which ovules develop on the inner wall of the ovary or in peripheral part, is– **Parietal**	NEET-2019
The scutellum observed in a grain of wheat or maize is comparable to which part of the seed in other dicotyledons– **Cotyledon**	JCECE-2018
Albuminous seeds are found in– **Wheat, Barley, Castor**	AIIMS-26.05.2018 Shift-II
Pollination in water hyacinth and water lily is brought about by the agency of– **Insects or wind**	NEET-2016 Phase-II
Heterospory and seed habit are exhibited by a plant possessing– **Ligule**	BVP-2000 Haryana PMT-2001
Non-albuminous seed is produced in– **Pea**	AIPMT-2014
In a cereal grain the single cotyledon of embryo is represented by– **Scutellum**	AIPMT-2006
Geocarpic fruit is– **Peanut**	AIPMT-2002
Endosperm of castor expect to find– **Glyoxysomes**	AIIMS-2005
In groundnut the food/oil reserve is present in– **Cotyledons**	AIPMT-1990
Pomegranate plant will lose its economic value if its are produced by induced– **Parthenocarpy**	AIPMT-1997
The embryo of sunflower has– **Two cotyledons**	BHU PMT-2002
The plant part which can respire without oxygen is– **Seed**	Rajasthan PMT-1996
Orchid seeds are– **Small and light**	BHU PMT (Mains)-2011
A simple one seeded fruit, in which pericarp is fused with seed coat is– **Caryopsis**	J&K CET-2008
Parachute mechanism of seed dispersal is seen in– **Helianthus, Calotropis**	JCECE-2005, Manipal-2000
Aleurone grains are rich in– **Protein**	HP CET-2011 Rajasthan PMT-2007
Seed may be defined as– **Matured ovule**	BHU PMT (Screening)-2007
The portion of embryonal axis above cotyledon is called as– **Epicotyl**	J&K CET-2012
Seeds possess spongy aril in– **Potamogeton**	BCECE-2010
The seed coat in both gymnosperms and angiosperms is derived from the– **Megasporangium**	AMU-1999
The conspicuous protein-storing layer of endosperm in cereal grains contains– **Aleurone grains**	AMU-1999
The ephemeral Tripulus tide over the dry conditions– **By lying in the forming of seeds**	AP EAMCET-2003
The outermost layer of maize endosperm is known as– **Aleurone**	Haryana PMT-2007
The part of the castor seed that yields oil is– **Endosperm**	CG PMT-2009 Haryana PMT-2009
The cotton thread fibres are– **Epidermal hair of seed**	CG PMT-2006

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Pure cellulose is obtained from– **Seed hairs**	**BHU PMT (Screening)-2011**
In pulses the proteins are stored in– **Cotyledons**	**AP EAMCET-2002**
Seeds which are able to withstand reduction in moisture and temperature are called– **Orthodox seeds**	
The remnant of nucellus in the seed is– **Perisperm**	**AP EAMCET-2000**
Seed habit was first originated in– **Seed ferns**	**CMC Ludhiana-2007**
A fruit in which seed coat and fruit wall is fused known as caryopsis present in– **Wheat (Poaceae family)**	**BCECE-2008**
Perisperm is the– **Remains of nucellus**	**Haryana PMT-2011**
Scutellum of maize is called– **Cotyledon**	**Haryana PMT-2011**
The scutellum observed in a grain of wheat or maize is comparable to which part of the seed in other monocotyledons– **Cotyledon**	**AIPMT (Screening)-2010**
An example of a seed with endosperm, perisperm and caruncle is– **Castor**	**AIPMT-2009**
The plant whose seeds are known to live the longest viability period is– **Nelumbo nucifera (Indian Lotus)**	**JIPMER-2015**
Albuminous seeds store their reserve food mainly in– **Endosperm**	**NEET (Karnataka)-2013**
The viability of seeds is tested by– **2, 3, 5 triphenyl tetrazolium chloride**	**NEET (Karnataka)-2013**
Aleurone layer is found in– **Endosperm**	**UP CPMT-2005**
Aleurone grains are rich in– **Protein**	**JIPMER-2014**
Seeds can respire even in the absence of– **Oxygen**	**Karnataka CET-2006**
Plant Family	
Lady finger belongs to family– **Malvaceae**	**CMC Vellore-2009,2012 JIPMER-2010 Rajasthan PMT-2008,2009 Punjab MET-2009 UP CPMT-2008,2009 BHU PMT(Screening)-2005**
Pencils are prepared from the wood of– **Juniperus virginiana**	**Haryana PMT-2005 JIPMER-2005 BHU PMT-2003**
The drugs that cause sleeplessness– **Amphetamines**	**AP EAPCET-23.05.2023, Shift-II**
Carpels and Stamens are in 1 : 2 ratio in the– **Liliaceae**	**TS EAMCET-11.05.2023, Shift-I**
Crotalaria juncea is used as– **Green manure**	**AP EAMCET-12.07.2022 Shift-II**
The plants having Apocarpous and Syncarpous ovary respectively– **Michelia, Papaver**	**AP EAMCET-12.07.2022 Shift-II**
Plant that produces both chasmogamous and cleistogamous flowers is– **Oxalis, Commelina**	**AP EAMCET-11.07.2022 Shift-II**
Swollen leaf base found in– **Leguminous plants**	**AP EAMCET-11.07.2022 Shift-II**
Plant in which floral buds store food material– **Agave**	**AP EAPCET-12.07.2022 Shift-I**
The inflorescence found in the family Euphorbiaceae with achlamydeous, unisexual flowers is– **Cyathium type**	**AP EAPCET-11.07.2022 Shift-I**
Multicarpellary, apocarpous type of carpel is observed in– **Michelia**	**GUJCET-2022**
The leaf base is present in– ***Glycine max***	**AP EAMCET-05.10.2021 Shift-I**
A distinct monocot character shown by the flowers of Liliaceae is– **Trimerous flowers**	**AP EAMCET-05.10.2021 Shift-I**
The differences between parents and offspring, among offsprings of the same parents and individuals of the same species are called– **Variations**	**MHT CET-06.10.2020 Shift-I**
'Colchicine', a mutagen is extracted from– **Corms bearing Liliaceae plant**	**TS EAMCET-29.09.2020 Shift-II**
Correct position of floral parts over thalamus in mustard plant is– **Gynoecium occupies the highest position, while the other parts are situated below it**	**NEET-2020 Phase-II**
Water hyacinth is called the– **Terror of Bengal**	**GUJCET-2020**
In Salvia and Cestrum, the pollination is achieved with help of– **Insects**	**MHT CET-08.10.2020 Shift-I**
Daucus carota (carrot) is a source of– **Anthocyanin**	**MHT CET-2019**
King of spices is– ***Piper nigrum***	**AIIMS-26.05.2019 Shift-II**

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Stamens epipetalous, alternate with the petals, usually not equal in length and filaments are basifixed, in– **Solanaceae**	**SRM JEEE-2018**
In plants growing under environmental stress condition, seeds germinate while they are on the mother plant. An example for such a condition is– **Rhizophora**	**TS EAMCET-02.05.2018 Shift-II**
Bambusa is a– **Monocarpic plant**	**TS EAMCET-02.05.2018 Shift-I DUMET-2002**
Helianthus distinguished from maize based on this anatomical character– **Protoxylem lacuna absent, phloem parenchyme present**	**AP EAMCET-25.04.2018 Shift-I**
Omega 3 fatty acid is present in– **Flax seed oil**	**JIPMER-2018**
Many carpels are free and each carpel of apocarpous gynoecium develops into a fruitlet in– ***Annona squamosa***	**TS EAMCET-12.05.2017**
Gulmohar produce– **Zygomorphic flowers**	**Karnataka CET-2017**
Stamens with long bifurcated connective are found in– **Salvia flower**	**MHT CET-2017**
Ricinus communis is the host plant of the silkworm called– **Eri silkworm**	**Tripura JEE-2017**
The plant having milky latex is– ***Euphorbia***	**SRM JEEE -2017**
Hevea brasiliensis is a source of– **Rubber**	**SRM JEEE-2017 AIIMS-1998**
Heroin is obtained from plant of family– **Papaveraceae**	**JCECE-2004**
Trimerous flower, superior ovary and axile placentation is characteristics of– **Liliaceae family**	**BHU PMT (Screening)-2005**
Presence of persistent calyx is a feature of– **Solanaceae family**	**UP CPMT-2006**
Opposite decussate and stipulate leaves is the characteristic feature of members of– **Rubiaceae family**	**Uttarakhand PMT-2006**
Parthenium, Eichhornia and Lantana are all– **Exotic species**	**AFMC -2009**
Jatropha is being tried in India as a bio fuel substitute for– **Fossil fuels**	**JCECE-2015**
Root pockets can be seen in– **Pistia**	**AP EAMCET-2000**
Parkinsonia is a good example of– **Phyllode**	**AIIMS-1994**
Syncarpous ovary can be seen in– **Mustard**	**UP CPMT-2013**
Pea plant belongs to the– **Fabaceae family**	**UP CPMT-2013**
Family Podostemaceae is placed under the series– **Multiovulatae aquaticae**	**Kerala PMT-2008**
Potato is included in solanaceae family because– **it is epipetalous, pentamerous and ovary is slightly diverted from its position**	**AIIMS-1997**
Cabbage is the largest– **Edible bud**	**AIIMS-1997**
Liquid wax is obtained from– **Jojoba oil**	**J&K CET-2002**
Plant material, which is used in culture medium is obtained from– **Coconut milk**	**BHU PMT (Mains)-2010**
Turpentine oil is obtained from– ***Pinus longifolia***	**BVP-2003**
Simmondsia chinensis is commonly known as– **Jojoba**	**BVP-2005**
Monoadelphous condition of stamens is found in– **Malvaceae**	**BVP-2002**
The characteristic type of placentation found in the members of Caryophyllacea is– **Free central**	**Kerala PMT-2009**
The distinct features of Fabaceae are– **Zygomorphic, diadelphous and monocarpellary**	**Kerala PMT-2012**
The specific characters of flowers of Canna is– **Irregular and asymmetric**	**Kerala PMT-2012**
The type of Inflorescence of family-Compositae is– **Capitulum**	**JCECE-2010**
Tectona grandis belongs to– **Lamiaceae family**	**BVP-2000**
Botanical name of Aswagandha is– ***Withania somnifera***	**BVP-2000**
Peanut oil is obtained from– ***Arachis hypogaea (Peanut plant)***	**BVP-2000**
Pinus roxburghii plants is used in– **Paint and varnish industry**	**AMU-1995**
Simmondsia chinensis is an oil yielding plant of Mexico and it has been recently introduced in Indian dessert. The common name of this plant is– **Jojoba**	**AMU-1995**
Sesbania aculeate plant is most commonly used as– **Green manure**	**AMU-1995**
The 3 sub-families of leguminosae are distinguished mainly on the basis of– **Inflorescence and lower characters**	**AIIMS-1995**

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Black wood is obtained from– **Dalbergia**	**AIIMS-1995**
Spirocyclic (hemicyclic) numerous free stamens and apocarpous carpels are found in– **Ranunculaceae family**	**AIIMS-1998**
Coconut coir is obtained– **Mesocarp**	**UP CPMT-2009**
Most of the economically important fibre yielding plants belong to– **Malvaceae family**	**UP CPMT-2007**
Pappus helps in dispersal of pollen by the wind in– **Asteraceae family**	**AIIMS-2011, J&K CET - 2000**
The family containing mustard and its main characters are– **Brassicaceae – Tetramerous flowers, six stamens, bicarpellary gynoecium, siliqua type fruit**	**AIIMS-2005**
Censar mechanism of seed dispersal is found in– **Papaveraceae**	**AIIMS-2014**
Pulses are obtained from– **Fabaceae**	**AIPMT-1993**
Epipetalous stamens with free filaments and fused anthers occur in– **Asteraceae**	**AIPMT-1992, 1991**
Syngenesious condition is found in– **Asteraceae**	**AIPMT-1991**
A characteristic feature of ovary of *Brassica campestris* is presence of– **Replum**	**Punjab MET-2006**
Reserpine is obtained from– ***Rauwolfia serpentina***	**Punjab MET-2006**
Verticillaster inflorescence is the characteristic of– **Labiatae family**	**JCECE-2002**
Rauwolfia serpentina is used in curing– **High blood pressure**	**JCECE-2006**
Placentation in Brassicaceae is– **Parietal type**	**JCECE-2006**
The origin centre of potato is– **Southern Peru**	**BVP-2014**
Turpentine oil, a ingredient in paint and varnishes is obtained from– ***Pinus longifolia***	**BVP-2014**
The characteristic inflorescence features of family-Moraceae and poaceae are– **Hypanthodium and spike of spikelet**	**BVP-2014**
The botanical name of cabbage is– ***Brassica oleracea* var. capitata**	**AFMC-2003**
Sunflower is a– **Fatty oil yielding plant**	**AFMC-2003**
Swollen and spongy petioles are characteristic of– **Trapa**	**Uttarakhand PMT-2010**
A plant with low CO_2 compensation point is– ***Tidestromia oblongifolia***	**Uttarakhand PMT-2010**
The characteristic fruit type in Asteraceae is– **Cypsela**	**Uttarakhand PMT-2010**
Epigynous flowers with numerous stamens are found in– ***Syzygium cuminis* (Jamun)**	**Punjab MET-2007**
A commonly used mastigator called supari is obtained from the– ***Areca catechu* plant**	**Punjab MET-2007**
The aquatic weed which is popularly called terror of Bengal is– **Eichhornia**	**AP EAMCET-2016**
This is an insectivorous plant– **Utricularia**	**Karnataka CET-2001**
Seeds of *Brassica compestris* provide– **Oil and oil cake**	**JIPMER-1996**
The order of Tulsi is– **Lamiales**	**BCECE-2015**
Long fibres of cotton seed are known as– **Lint**	**WB JEE-2007**
Carthamus tinctorius belongs to– **Asteraceae family**	**WB JEE-2007**
The plants which have antidiabetic properties– **Gymnema sylvestre**	**Karnataka CET-2013**
Compositae is also called– **Asteraceae**	**DUMET-2002**
A plant species which has been exploited for the production of Hirudin is– ***Brassica napus***	**DUMET-2011**
Oblique ovary is found in– **Solanaceae family**	**DUMET-2004**
Botanical name of tea is– ***Camellia sinensis***	**Rajasthan PMT-1997**
Gossypium sp. (cotton) concerned with– **Malvaceae family**	**Rajasthan PMT-1997**
Atropa belladonna is the member of– **Solanaceae family**	**Rajasthan PMT-1997, 1999**
The number of stamens present in Cruciferae family are– **Mostly 6**	**Rajasthan PMT-1997**
A nutrient not required / has no function in plants except in Fabaceae, but essential nutrient of animals whose deficiency makes a person anemic as it is an integral part of vitamin B-12; and this nutrient is– **Cobalt**	**MP PMT-2013**
Seed dispersal by parachute type mechanism is found in– **Taraxacum of Asteraceae**	**MP PMT-2013**

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The association of ants and the members of the family Rubiaceae is known as– **Myrmecophily**	**MP PMT-2013**
A non-succulent xerophytes having thick leathery leaves with white sticky waxy coating is– **Calotropis**	**AP EAMCET-1998**
Transversely arranged carpels are found in– **Tridax**	**AP EAMCET-1998**
Nimbin and Nimbidin are got from– **Azadirachta indica (neem tree)**	**AP EAMCET-1998**
Translator mechanism is found in– **Calotropis**	**AP EAMCET-1998**
The scientific name of amla is– ***Emblica officinalis***	**AP EAMCET-1998**
In Agave Americana, bulbil is a modification of– **Floral bud**	**AP EAMCET-1998**
Secondary rachis is modified as phyllode in– **Parkinsonia**	**AP EAMCET-1998**
Compound bead is found in– **Echinops**	**AP EAMCET-1998**
Tripinnate leaves are found in– **Moringa**	**AP EAMCET-1998**
Male flower is represented by a single stamen in– **Poinsettia**	**AP EAMCET-1998**
Buttress roots are found in– **Terminalia**	**AP EAMCET-1998**
Orchreate stipules found in– **Polygonaceae**	**Punjab MET-2011**
Family Lilliaceae is characterized by– **Trimerous flower**	**Rajasthan PMT-2002**
A characteristic feature of ovary of *Brassica campestris* is– **Presence of replum**	**J& K CET - 2006** **Rajasthan PMT-2002**
Reserpine is obtained from– **Rauwolfia serpentina**	**Rajasthan PMT-2002**
The Stamens of family Malvaceae is– **Monoadelphous**	**Rajasthan PMT-1999**
The fruit of Solanaceae family is– **Berry**	**Rajasthan PMT-1999**
Timber yielding plant *Shorea robusta* belong to the– **Dipterocarpaceae family**	**Manipal-2014**
The botanical name of mulberry is– **Morus**	**Manipal-2005**
Replum is found in– **Brassicaceae family**	**Manipal-2001**
Gynoecium in the members of family Leguminosae is composed of– **One carpel i.e. mono carpellary**	**Karnataka CET-2005**
The family belonging to the order sapindales– **Anacardiaceae**	**TS EAMCET-15.05.2016**
Vascular bundles are arranged in a ring in the members of– **Euphorbiaceae family**	**CMC Vellore-2008**
The cloves which are used in food preparation are– **Flower buds**	**CMC Vellore-2008**
Hypogynous flowers is absent in the family– **Asteraceae**	**CMC Vellore-2008**
In the members of family-Malvaceae anthers are described as– **Monoadelphous and monothecous**	**CMC Vellore-2008**
Oval and eccentric starch granules are present in– **Potato**	**Rajasthan PMT-1995**
Bicollateral vascular bundles are the characteristic of family– **Cucurbitaceae**	**Rajasthan PMT-1995**
Axile placentation is present in family– **Malvaceae and Liliaceae**	**Rajasthan PMT-1995**
Green potatoes are toxic due to– **Solanine**	**JIPMER-2012, VMMC-2009**
Commercial cork is obtained from– ***Quercus suber***	**JIPMER-2005, BHU PMT-2003**
Obliquely placed ovary and swollen placenta is associated with– **Solanaceae**	**J&K CET-2012**
On the basis of position of the ovary, mustard plants are– **Hypogynous**	**J&K CET-2012**
One of endangered species of Indian medicinal plants is that of– **Podophyllum**	**Rajasthan PMT-2010**
The anthers in Solanaceae are– **Dithecus, Introrses**	**BCECE-2006**
Ruminate endosperm found in– **Annonaceae family**	**BCECE-2010**
Asafoetida is a– **Oleo-gum-resin**	**AMU-2011**
Resupinate condition is characteristic of the flowers belonging to the most advanced family of monocots– **Orchidaceae**	**AMU-2011**
The petiole modified into flattened lamina like structure is present in– **Acacia anuriculoformis**	**AMU-2011**
Tea and coffee are affected by– **Cephaleuros**	**Haryana PMT-2005** **JIPMER-2005**
Feathery stigma belongs to– **Wind-pollinated flowers**	**MGIMS Wardha-2011** **AIIMS-2011**
A feature of Selaginella that is of great evolutionary significance in the presence of– **Heterosporous condition**	**JIPMER-1998**
Phytochrome was discovered by– **Borthwick and handricks**	**CG PMT-2006**

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Simple sieve plate with single perforation is found in– **Cucurbita**	**J&K CET-2007**
Placentation of Mimosa pudica is– **Marginal**	**Haryana PMT-2011**
The standard petal of a papilionaceous corolla is also called– **Vexillum**	**NEET-2016 Phase-I**
Tricarpellary, syncarpous gynoecium is found in flowers of– **Liliaceae family**	**NEET-2016 Phase-I**
Ovary is half-inferior in the flowers of– **Plum**	**AIPMT (Screening)-2010**
In unilocular ovary with a single ovule the placentation is– **Basal**	**AIPMT (Screening)-2010**
Jatropha plant species is the best option for the production of– **Bioethanol**	**AIPMT-2009**
The plant in which the tangential walls of collocytes are excessively chickened but radial walls are thin– **Eupatorium**	**AP EAMCET-2010**
The set of characteristics related to plants belonging to family Fabaceae– **Vexillary aestivation of corolla, diadelphous stamens and monocarpellary, unilocular ovary**	**Karnataka CET-2014**
A plant has an androecium with monadelphous stamens, monothecous and reniform anthers. The corolla exhibits contorted aestivation. The plant could be– **Hibiscus**	**Karnataka CET-2009**
The host for Cercospora personata belong to this family of angiosperms– **Leguminosae**	**Karnataka CET-2012**
The presence of corollary corona, sagittate anthers and dumb-bell shaped stigma are the characteristic fetaurs of– ***Catheranthus roseus***	**Karnataka CET-2010**
Source of commercial chewing gum latex is– **Achras sapota**	**JIPMER-2016**
Formation of endosperm doesn't take place in– **Orchidaceae**	**JIPMER-2016**
The condition of modification of stipules into spines represented by– **Euphorbia and Zizyphus**	**AP EAMCET-2005**
Neem seed oil is used for external application in the cure of– **Leprosy**	**AP EAMCET-2005**
Jatropha is being tried in India as a biofuel substitute for– **Fossil fuels**	**AIPMT-2008**
The fruit is chambered, developed from inferior ovary and has seeds with succulent testa in– **Pomegranate**	**AIPMT-2008**
The Replum is present in the ovary of flower of– **Mustard**	**AIPMT-2008**
Most of the economically important fibre yielding plants belong to family– **Malvaceae**	**JIPMER-2009**
Plants like *Aegle marmelos, Ocimum sanctum* and *Ficus religeosa* are a group of plants designated as– **Sacred plants**	**Karnataka CET-2008**
An alkaloid called 'Reserpine' is extracted from– **Roots of Sarpagandha**	**Karnataka CET-2008**
The fruit of Solanaceae is– **Berry or capsule**	**UP CPMT-2005**
Triple fusion was discovered in this plant possessing naked bulb, fleshy leaf bases and loculicidal capsule– **Lilium**	**AP EAMCET-2013**
Tetradynamous condition of androecium is characteristic feature of family– **Brassicaceae**	**UP CPMT-2014**
Respiratory roots, positively aerotropic structure in mangroves are found in plants– **Sonneratia, Rhizophora and Avicennia**	**UP CPMT-2014**
The fruit found in plants of family-Poaceae– **Caryopsis**	**UP CPMT-2014**
Ruminate endosperm is found in the seeds of family– **Annonaceae**	**UP CPMT-2011**
In the members of family Malvaceae, anthers are described as– **Monoadelphous and monothecous**	**Karnataka CET-2006**
A plant with actinomorphic and hypogynous flowers, heterochlamydeous perianth, dorsifixed and extrorse anthers dehiscing transversely belongs to– **Thalamiflorae**	**AP EAMCET-2009**
Quinine used for treatment of malarial fever extracted from– **Cinchona officinalis**	**UP CPMT-2006**
Carthamus belongs to family– **Compositae**	**UP CPMT-2006**
An example for holandric inheritance is– **Webbed toes**	**AP EAMCET-2002, JCECE-2002**
Barr body is present in– **Somatic cell of female**	**AFMC-2010**
Test cross in plants or in Drosophila involves crossing– **The F_1 hybrid with a double recessive genotype**	**AIPMT (Mains)-2011**

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06.
ANATOMY OF FLOWERING PLANTS

6.1 The Tissues

- Dumb-bell shaped guard cells are found in– **Grasses**
- The epidermal hairs on the stem are called– **Trichomes**
- Permanent tissues having many different types of cells are– **Used in long distance transportation**
- Epidermal and ground tissue system are made of– **Simple permanent tissues**
- The intrafascicular cambium– **Is a meristematic tissue**
- Stomata are the component of– **Epidermal tissue system**
- The function of vessels in flowering plants– **Transport of water and minerals**
- The central lumens are obliterated in– **Xylem fibres**
- The function of lateral meristem is– **It changes girth of the plant axis**
- During the formation of leaves and elongation of stem, some cells 'left behind' from shoot apical meristem, constitute the– **Axillary bud**
- A tissue is a group of cells having– **Common origin and usually perform a common function**
- Tissue are classified into meristematic and permanent on the basis of– **Capacity of division**
- Regeneration of damaged growing grass grazing is largely due to– **Intercalary meristem**
- Root hair develop from the region of– **Maturation**
- Apical meristems are likely to be present in a twig of a plant possessing 4 branches and 26 leaves are– **5**
- A piece of wood having no vessels (trachea) must be belonging to– **Pine**
- Meristematic tissues are composed of– **Immature cells with power to divide**
- Both apical meristem and intercalary meristem are ..... meristems. **Primary**
- The growth of root and stem in length with the help of apical meristem is called– **Primary growth**
- During the formation of the primary plant body, specific regions of the apical meristem produce– **Dermal , Ground , Vascular tissues**
- Tissue is dead and provides mechanical support to plant organs– **Sclerenchyma**
- Tissues consist of living cells– **Companion cells**
- Both apical meristems and intercalary meristems are primary meristems because– **They appear early in the life of a plant, They contribute to the formation of the primary plant body**
- In stem, the primary xylem is– **Endarch**
- Jute is mainly composed of– **Bast fibres**
- Vascular cambium is a– **Lateral meristem**
- Axillary bud and terminal bud are derived from the activity of– **Apical meristem**
- The meristem occur at the tip of roots and shoots is– **Apical meristem**
- Selereids are made up of which tissue– **Sclerenchyma**
- Collenchyma is a– **Living mechanical tissue**
- The thickening in collenchyma is due the deposition of– **Pectin**
- Albuminous cells occurs in– **Phloem**
- Grass regenerate and elongate by the activity of– **Intercalary meristems**
- Permanent tissues develop from– **Primary and secondary meristem both**
- Provides mechanical support to the growing parts of plants such as young stem and petiole of a leaf– **Collenchyma**
- Sclereids are found– **Solid endosperm of coconut**
- Initial increase in length of stem or root is because of– **Apical, Intercalary meristem**
- Simple tissue, provide mechanical support to the petiole of a leaf– **Collenchyma**
- When protoxylem faces pericycle, it is called– **Exarch**
- In sclerenchyma, walls are– **Lignified**
- The major function of sieve tubes in plants is– **Translocation of organic solutes**
- Out of the four components of xylem - tracheids, vessels, xylem fibres and oylem parenchyma, how many are dead– **Three**
- On the basis of features, identify the xylem element– **No tapering ends**
- Elements of xylem lack lignified cell wall– **Xylem parenchyma**
- Tissue provide mechanical strength against bending & swaying– **Collenchyma**
- Comprises only simple tissues is– **Parenchyma, Collenchyma & Sclerenchyma**

6.2 The Tissue System

- Parenchyma, collenchyma and sclerenchyma in plants are- **Simple tissues**
- Meristematic tissues are composed of– **Immature cells with power to divide**
- _____ is a living mechanical tissue– **Collenchyma**
- Dermal tissues, Ground tissues and Vascular tissues produces - **Apical meristem**
- _____ is absent in most of the monocotyledons– **Phloem parenchyma**
- The Parenchymatous cells are– **Thin-walled**
- Collenchyma differs from parenchyma in– **Possessing thick cell wall**
- Absent in the collenchyma– **Intercellular spaces**
- The elongated, thick-walled and tapering cells are– **Sclerenchymatous**
- The woody axis of flowering is produced by– **Secondary meristem**
- Plasmodesmata are usually observed between– **Sieve tubes and companion cells**

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- You are given a fairly old piece of dicot stem and a dicot root. That anatomical structures will you use to distinguish between the two– **Protoxylem**
- Grass leaves curl inwards during very dry weather, because– **Flaccidity of bulliform cells**
- The tissues provide maximum mechanical support to plant organs. That tissue is– **Sclerenchyma**
- The commonly found tissue in pulp of fruits like guava and in leaves of tea is– **Sclereid**
- Phloem in gymnosperms Lacks– **Both sieve tubes and companion cells**
- A plant tissue, when stained, showed the presence of hemicellulose and pectin in cell wall of its cells. The tissue represents– **Collenchyma**
- Identify the simple tissue from the– **Parenchyma**
- Cells of this tissue are living and show angular wall thickenings. They also provide mechanical support. The tissue is– **Collenchyma**
- ..... conditions of xylem is present in both monocot and dicot stems– **Endarch**
- Vascular tissues of angiosperms differ from those of gymnosperms in–**Presence of vessels in the xylem, Presence of companion cells in phloem**
- That tissue systems of constitutes bulk of the plant body– **Ground tissue system**
- In ..... vascular bundle, a strip of vascular cambium is present in between the xylem and phloem– **Open**
- Radial vascular bundles characteristically occur in– **roots**
- Vascular system consists of– **Xylem, Phloem**
- ..... is true about parenchymatous cells. **Presence of intercellular space**
- In collenchyma, thickenings are due to deposition of– **Cellulose, Hemicellulose, Pectin**
- In fruit walls of nuts, pulp of guava and pear, seed coats of legumes found- **Sclereids**
- ..... tissues has dead cells with thick and lignified cell walls, having a few or numerous pits **Sclerenchyma**
- Trichomes are– **Multicellular**
- Root hairs are– **Unicellular**
- Cuticle is absent in– **Roots**
- Cuticle is secreted from– **Epidermis**
- Bean-shaped structure which encloses stomatal pore is known as– **Guard cell**
- Mesophyll cells come under– **Internal Ground tissue**
- Closed vascular bundless lack– **Cambium**
- Epidermal tissue system is not a part of– **Companion cells**
- Ground tissue system is not part of– **Vascular bundles**
- If xylem and phloem are arranged to different radii, then arrangement of vascular bundles is said to be– **Radial**
- The outside of the epidermis is often covered with a waxy thick layer called– **Cuticle covering**
- The type that of vascular bundle is common in stems and leaves– **Conjoint**

6.3 Anatomy of Dicotyledonous and Monocotyledonous Plants

- Hypodermis of dicotyledonous plants is made up of– **Collenchyma**
- _____is absent in most of the monocotyledons– **Phloem parenchyma**
- Radial vascular bundles occur in– **Both monocot and dicot roots.**
- Conjoint collateral and close vascular bundle with endarch xylem is characteristics of– **Monocot stem**
- In which both xylem and phloem are present at the same radius - **Collateral vascular bundle**
- Epidermis is usually consists– **Single layer**
- The outside of the epidermis is often covered with a waxy thick layer called the cuticle which prevents the loss of water and it generally absent in– **Root**
- Cambium is most active in– **Summer**
- Phellem is– **Cork**
- Lignin is the important constituents in the cell wall of– **Xylem**
- Lenticels are found in– **Woody trees**
- Pericycle in the form of lunar patches of sclerenchyma is found in– **Dicot stem**
- Conjoint, collateral and open vascular bundles are found in– **Dicot stem**
- The continued formation and accumulation of secondary xylem leads to– **Crushing of primary phloem and secondary phloem gradually**
- In mature parts of most of the flowering plants, the tissue formed after dedifferentiation are– **Interfascicular cambium, phellogen**
- Elongated or columnar mesophyll cells without intercellular spaces are found towards– **Adaxial epidermis of dorsiventral leaf**
- Generally more active on the inner side than on the outer side - **The cambial ring**
- In a dicot stem, the interfascicular cambium strip arises– **From medullary rays**
- The wood is, in fact a– **Secondary xylem**
- Two alternate rings of spring wood and autumn wood is formed by - **An annual ring**
- Growth rings are generally well marked in trees growing in– **Shimla**
- The function of heartwood is– **Mechanical support**
- The heartwood cannot conduct water because of– **Deposition of organic compounds**
- Phellogean, phellem and phelloderm are collectively known as– **Periderm**
- The common feature to heartwood and sapwood is– **Both are the regions of secondary xylem**
- If vascular bundles are radial in a plant part– **Xylem will be exarch**
- In a plant part, vascular bundles are conjoint and closed. This plant part– **Has a sclerenchymatous hypodermis**
- Sclereids are commonly found is– **Leaves of tea**
- Total primary xylem and old secondary xylem contains - **Heart wood**
- Sclerenchymatous tissue commonly found in fruit walls of nuts and leaves of tea known as sclereids. They– **are highly thick, lignified and dead cells**
- Secondary lateral meristem like cork cambium or phellogen involved in secondary tissues formation is derived from– **Cortex**

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- Phloem parenchyma stores– **Food material, resins latex and mucilage**
- Phellogen is made of– **Narrow, thin walled and nearly rectangular cells**
- The distinguishing feature of open vascular bundles is presence of– **Cambium**
- _____ type of arrangement of vascular bundles occurs in the roots of monocots– **Radial**
- The presence of cambium in the vascular bundles provides them the ability to– **Form secondary tissues**
- Lateral roots are arise from– **Pericycle**
- Polyarch xylem bundles are found in– **Monocot root**
- The casparian strips are present on the plant cells of the root are– **Barrel-shaped**
- The conjunctive tissue lines between the– **Xylem and Phloem**
- A monocot root differs from a dicot root by– **Large pith**
- Vascular bundles surrounded by a sclerenchymatous bundle sheath is a feature of– **Monocot stem**
- The central most portion of stem of dicotyledonous plants is occupied by– **Pith**
- Numerous large spaces and air cavities between its cells - **Spongy mesophyll in dicot leaf**
- Cells provide mechanical support to petiole of a level– **Collenchyma**
- Tracheids differ from other tracheary elements in– **Being imperforate**
- The fate of primary xylem in a dicot root showing extensive secondary growth is– **It is retained in the centre of the axis**
- Epiblema of roots is equivalent to– **Epidermis**
- A conjoint and open vascular bundle will be observed in the transverse section of– **Dicot stem**
- Interfascicular cambium and cork cambium are formed due to– **Cell dedifferentiation**
- A transverse section of stem is stained first with safranin and then with fast green, the usual schedule of double staining for the preparation of a permanent slide. The colour of the stained xylem and phloem would be– **Red and green**
- Casparian strips are the bands of thickenings present on ..... walls of endodermis. **Radial, Tangential**
- Polyarch vascular bundles generally occur in– **Monocot root**
- A typical monocotyledonous root is characterised by– **No secondary growth, Usually more than six xylem bundles, Large and well developed pith**
- That plant part of possesses polyarch condition of vascular bundles with a well developed pith– **Monocot root**
- Vascular bundle is enclosed within a well developed sclerenchymatous sheath in– **Monocot stem**
- Hypodermis is ..... in sunflower stem and ..... in maize stem– **Collenchymatous, sclerenchymatous**
- Large and well developed pith is not found in– **Monocot stem dicot root**
- Conjoint and closed vascular bundles are found in– **Maize stem**
- In plants, lateral roots arise from– **Pericycle**
- In a dorsiventral leaf, location of palisade tissue and phloem is respectively on the ..... surfaces– **Adaxial and abaxial**
- Stomata are distributed more on the lower surface than on the upper surface in– **Dorsiventral leaf**
- In a dorsiventral leaf, ... is true regarding the position of xylem– **Xylem is towards adaxial epidermis**
- All the xylem elements, when mature, are dead except– **Xylem parenchyma**
- Vessel-less plant is a– **Pinus**
- Vascular cambium and cork cambium are the examples of– **Lateral meristem**
- Layer of cells impervious to water because of a band of suberised matrix called– **Casparian strip**
- Casparian strips occur in– **Radial and tangential walls of endodermis**
- The specialised cells in the epidermis of Monocot leaves that help in rolling and unrolling of leaves are– **Bulliform cells**
- Water containing cavities are present within the vascular bundles of– **Monocot stem**
- Gymnosperms lacks– **Sieve tubes, Companion cells, Vessels**
- The central portion of the stem is called– **Pith**
- In monocot stem, hypodermis is– **Sclerenchymatous**
- Pith is not well developed in– **Dicot root**
- Epiblema is the alternate name of– **Epidermis of root**
- Less than six radial vascular bundles are present in– **Dicot Root**
- Vascular bundles in dicot stem are– **Conjoint, open and endarch**
- Hypodermis in dicot stem and monocot stem is respectively– **Collenchymatous, Sclerenchymatous**
- Monocot root features is– **Fibrous**
- In dicot stem, starch sheath is– **Endodermis**
- Numerous vascular bundles are found scattered in monocot stem. Each vascular bundle is surrounded immediately by ..... bundle sheath– **Sclerechymatous**
- In dicot roots, cell wall of endodermal cells is– **Suberised, impermeable to water**
- In dorsiventral leaf, palisade parenchyma is towards- **Adaxial surface**
- Vascular bundles surrounded by thick walled bundle sheath cells can be observed in– **Dicot leaf**
- Differentiates characteristic a dicot leaf from monocot leaf– **Palisade and spongy parenchyma**
- Vascular bundles are surrounded by a layer of thick walled– **Bundle sheath cells**
- In monocot stems, secondary growth cannot occur because vascular bundles are– **Closed**
- The waxy material deposited in the casparian strip of the endodermis is– **Suberin**

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6.4 Secondary Growth

- In old trees, central or innermost layers of the stem is dark brown and comprises dead elements with highly lignified walls is called– **Heart wood**
- Secondary growth is absent in– **Monocot plants**
- Secondary medullary rays are– **Narrow band of parenchyma**
- Stems of Zea mays and sunflower are similar to each other in having– **Endarch primary xylem**
- The tissue participates in the secondary growth– **Lateral meristem**
- The size of vascular bundles in a dorsiventral leaf is dependent on– **Size of veins**
- Growth in plants is largely restricted to specialised regions of active cell division called– **Meristems**
- Plants having little or no secondary growth are– **Grasses**
- ..... is made up of dead cells– **Phellem**
- In old trees the greater part of secondary xylem is dark brown and resistant to insect attack due to– **Secretion of secondary metabolities and their deposition in the lumen of vessels**
- In conifers, fibres are likely to be absent in– **Secondary xylem**
- When we peel the skin of a potato tuber, we remove– **Periderm**
- A vessel less piece of stem possessing prominent sieve tubes would belong to– **Trochodendron**
- ..... the cell types always divides by anticlinal cell division. **Protoderm**
- Phellogen and phellem respectively denote– **Cork cambium and cork**
- Cork tissue arises from– **Phellogen**
- After two or three years of secondary growth the cortex in dicot roots– **Is largely lost**
- Cork cambium gives rise to– **Phellem, Phelloderm, Secondary cortex**
- Secondary growth do not occur in– **Monocot stem**
- Physiologically functional part of wood is– **Sap wood only**
- Heart wood differs from sapwood in– **Having dead and non-conducting elements**
- Secondary growth is due to– **Cambium**
- When a tree grows older which of the following increase rapidly– **Heart wood**
- The tissue that gives rise to the secondary growth tissue is– **Vascular cambium**
- Major part of wood of old dicot stem is filled with tannins, resins and gums. This part is called– **Heart wood**
- The combination of, two secondary xylem components forms an annual ring– **Early wood and late wood**
- During secondary growth in dicot stem, cambial ring is formed by intrafascicular cambium and– **Interfasicular cambium**
- The wood that grows in the winter due to inactive cambium is known as ——— **Autumn wood**
- During secondary growth in dicot stem, cork cambium has cut off closely arranged prenchymatous cells. These cell have been cut off towards– **Outer side**
- Lens-like shaped structures of cork helps in gaseous exchange are– **Lenticels**
- Cork is also known as– **Phellem**
- For lenticels, one should observe– **Old woody stem**
- Responsible for formation of annual rings– **Differential activity of vascular cambium**
- Annual ring is formed by– **Early wood + late wood**
- Cambium is generally more active on– **Inner side**
- Annual rings are formed basically due to– **Marked variations in seasons**

6.5 Miscellaneous

- Identify the simple tissue system from among the following– **Parenchyma**
- Cells of this tissue are living and show angular wall thickening. They also provide mechanical support. The tissue is– **Collenchyma**
- Epiblema of roots is equivalent to– **Epidermis**
- A conjoint and open vascular bundle will be observed in the transverse section of– **Dicot stem**
- Interfascicular cambium and cork cambium are formed due to– **Cell dedifferentiation**
- Phellogen and phellem respectively denote– **Cork cambium and cork**
- The pairs of parts, a flowering plant is epidermis absent– **Root tip and shoot tip**
- A piece of wood having no vessels (trachea) must be belonging to– **Pine**
- A plant tissue, when stained, showed the presence of hemicellulose and pectin in cell wall of its cells. The tissue represents.– **Collenchyma**
- In conifers, fibres are likely to be absent in– **Secondary xylem**
- When we peel the skin of a potato tuber, we remove– **Periderm**
- A vessel-less piece of stem possessing prominent sieve tubes would belong to– **Trochodendron**
- The cell types that of always divide by anticlinal cell division– **Protoderm**
- The fate of primary xylem in a dicot root showing extensive secondary growth is– **It is retained in the centre of the axis**
- Large, empty colourless cells of the adaxial epidermis along the veins of grass leaves are– **Bulliform cells**
- Grass leaves curl inwards during very dry weather. The most appropriate reason– **Flaccidity of bulliform cells**
- Phloem in gymnosperms lacks– **Both sieve tubes and companion cells**
- Secondary xylem and phloem is dicot stem are produced by– **Vascular cambium**
- Casparian strips occur in– **Endodermis**
- Plants having little or no secondary growth are– **Grasses**
- Stomata in grass leaf are– **Dumb-bell shaped**

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EXAM POINT

Tissue	
The hypodermis tissues in dicot and monocot stems respectively– **Collenchyma and Sclerenchyma**	AP EAPCET-22.05.2023, Shift-II
Irregularly arranged vascular bundles within the ground tissue are called– **atactostele**	Tripura JEE-2019
Structurally the amphicribal vascular bundles resemble closely to– protostele	CMC Vellore-2013
Hydathode is a– **secretory tissue**	BVP-2006
Transfusion tissue is meant for translocation of– **Organic solutes**	CMC Vellore-2011
Chlorenchyma is known to develop in the– **Spore capsule of a moss**	MGIMS Wardha-2010
Angular collenchyma occurs in– **Cucurbita**	SJIPMER-2013
Velamen is found in– **Vanda**	Manipal-2004
A controlled condition chamber for tissue – **Phytotron**	MGIMS Wardha-2005
Three tissue systems are suggested by– **Sachs**	Uttarakhand-2005
Quiescent centre theory was proposed by– **Clowes**	Haryana PMT-2004 Manipal-2003
The branch that deals with the study of trees is– **Dendrology**	Haryana PMT-2003
This is a specialized tissue found in the mesophyll of Cycas and Pinus leaves– **Transfusion tissue**	J&K CET-2007
Meristematic Tissue	
Virus free plants are obtained in 'In-vitro' through– **Meristems**	AP EAPCET-12.07.2022 Shift-I
Auxiliary buds which forms branches or flowers are present in– **Apical meristem**	AP EAMCET-25.09.2020 Shift-II
Regeneration of damaged growing grass following grazing is largely due to– **Intercalary meristem**	NEET (Odisha)-2019
Auxiliary bud and terminal bud are derived from the activity of– **Apical meristem**	Rajasthan PMT AIPMT-2002
Maximum amount of growth in root occurs– **behind the apex**	Uttarakhand PMT-2011
Meristem, which produces vascular bundles, is– **procambium**	Uttarakhand PMT-2011
Dermatogen, periblem and plerome are– **meristematic tissues**	CMC Vellore-2013
Decapitation of plant leads to the activation of axillary buds due to– **auxin translocation**	AIIMS-1995
Cambium of root is an example of– **Secondary meristem**	AIIMS-2000
The apical meristem of the root is present– **In all the roots**	AIPMT-2003
Best material for the study of mitosis in laboratory is– **Root tip**	AIPMT-2002
Meristem plant cells will show– **Totipotency**	JCECE-2014 AFMC-2000, AIPMT-1993
Mowing grass lawn facilitates better maintenance because– **removal of apical dominance and stimulation of intercalary meristem**	AIPMT-1989
The meristem, which develops into a primary vascular tissue is– **procambium**	CG PMT-2005
Lateral root originates from– **pericycle**	DUMET-2003
Meristematic cells have– **thin cell wall and no intercellular spaces**	Manipal-2005
Quiescent centre is a– **inactive zone**	Manipal-2005
The histogens are classified on the basis of– **cells they give rise to future tissue**	Manipal-2005
The meristem that is parallel to the longitudinal axis of the plant is– **phellogen**	J&K CET-2010
Hanstein proposed the– **histogen theory**	Rajasthan PMT-1995
Growth of stem in diameter is due to– **lateral meristem**	MGIMS Wardha-2012 Rajasthan PMT-1999
Quiescent centre is present in– **root apex**	Rajasthan PMT-2005
Wound healing is due to– **secondary meristem**	JIPMER-2013
Portion of apical meristem that gives rise to xylem tissue is called– **Procambium**	WB JEE-2012
Meristematic region is the region of– **cell division**	Rajasthan PMT-2004

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Thin-walled, densely protoplasmic, isodiametric and nucleated – **Meristematic cells**	BVP-2010
Girth development is due to– **lateral meristem**	UP CPMT-2010, AIPMT-1988
Meristematic tissue are– **premature having ability of division**	DUMET-2005, UP CPMT-2003
The fallen stem of cereals/grasses to become erect to allow– **Intercalary meristem**	MGIMS Wardha-2007
To promote the growth of lateral branches of a plant– **apical bud is removed**	Karnataka CET-2002
Viral infection is usually absent in– **Apical meristem**	VMMC - 2009 BHU PMT (Screening)-2009 Uttarakhand PMT-2009
The length of different internodes in a culm of sugarcane is variable because of– **intercalary meristem**	Rajasthan PMT-2010
Cork cambium and cambium are the example of– **lateral meristem**	Rajasthan PMT-1998 AIMPT -1990
The outermost primary meristem gives rise to– **epidermis**	UP CPMT-2001
The stem of grasses and related plants elongate by the activity of– **apical and intercalary meristem**	Karnataka CET-2003
The tissue of highest respiratory activity is– **Meristem**	CG PMT-2007
Inter fascicular cambium is found– **between two vascular bundles**	Haryana PMT-2005
Intercalary meristem results in– **primary growth**	Haryana PMT-2007
The tunica-corpus theory was proposed by– **Schmidt**	CG PMT-2009, 2006 Rajasthan PMT-2001 Haryana PMT-2009
A mutant which has lost its ability to synthesize one or more essential compounds are called- **auxotroph**	Haryana PMT-2004
Interfascicular cambium is– **secondary meristem**	Manipal-2013
Fascicular, interfascicular and extra stelar cambium together constitute– **lateral meristems**	AMU-1997
Lateral meristem is responsible for– **Growth in thickness**	CG PMT-2006
Plant length is increased by– **Apical meristem**	MGIMS Wardha-2009 Haryana PMT-2009 CG PMT-2009
Examples for lateral meristems are– **fascicular cambium and cork cambium**	JCECE-2012, Manipal-2009
Grass stem elongates after initial growth due to– **intercalary meristem**	Uttarakhand PMT-2010 AP EAMCET-2002 AMU-1996
Fusiform initial forms– **tracheary elements**	Haryana PMT-2008
Cells in continuous state of cells division – **Meristem**	Haryana PMT-2003
The secondary meristem initiates– **Radial growth**	J&K CET-2007
Permanent source of active initiates, reservoir of resistant cells and reservoir of passive cells to form new root apex if root apex is damaged/killed – **Quiescent centre**	BVP-2012
Primary growth is caused by– **apical meristem**	BCECE-2002
Vascular cambium never develops in the stem of– **banana**	AMU-2001
Intercalary meristem is a derivative of– **Primary meristem**	Karnataka CET-2008
If the apical bud has been removed then we observe– **More lateral branches**	AIPMT-2000
Function of companion cells is– **Loading of sucrose into sieve elements**	AIPMT (Mains)-2011
Meristematic tissue responsible for increase in girth of tree trunk is– **Lateral meristem**	NEET (Karnataka)-2013
In land plants, the guard cells differ from other epidermal cells in having– **Chloroplasts**	AIPMT (Screening)-2011
An important step in the manufacture of pulp for paper industry from the woody tissues of plants is the– **Preparation of pure cellulose by removing lignin**	AIPMT-2005

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Parmanent (Simple and Complex) Tissue	
P-proteins are associated with– **sieve tube elements**	**UP CPMT-2009 Punjab MET-2009 Rajasthan PMT-2009 MGIMS Wardha-2005 UP CPMT - 2005**
Complex tissue includes– **conducting tissue**	**HP CET-2011, BCECE-2006 VMMC-2005, AMU-2004**
Companion cell consist of– **living cells**	**JIPMER - 2012 Uttarakhand PMT-2009 BVP-2009, VMMC-2009 BHU PMT (Screening)-2009**
Xylem development is poor in– **Hydrophytes**	**AP EAPCET-12.07.2022 Shift-I**
The living mechanical tissue in plants is– **Collenchyma**	**TS EAMCET-28.09.2020 Shift-I**
Pectinisation is seen in– **Collenchyma**	**AP EAMCET-24.09.2020 Shift-II**
The tissue generally present in all organs of plant is– **Parenchyma**	**SRM JEEE-2019**
Vessels are found in– **All angiosperms and some gymnosperm**	**AIPMT-2002**
The movement of water and minerals in xylem and the movement of phloem sap in phloem is respectively– **Unidirectional, bidirectional**	**GUJCET-2016**
The main function of phloem is translocation of– **food**	**BHU PMT (Mains)-2010**
The Cohesion theory of ascent of sap is proposed by– **Dixon and Jolley**	**BVP-2003**
Xylem is involved in conduction of– **water**	**BVP-2001**
Leptome is used for– **Phloem**	**BHU PMT (Mains)-2006**
The branched sclereids present in hydrophytes are– **Astrosclereids**	**AIIMS-2009**
Collenchyma occurs in the stem and petioles of– **dicot herbs**	**AIPMT-1990**
Sieve tubes are suited for translocation of food because they possess– **broader lumen and perforated cross walls**	**AIPMT-1989**
Death of protoplasm is a pre-requisite for a vital function like– **transport of sap**	**AIPMT-1989**
Bordered pits are found in– **vessel wall**	**AIPMT-1993**
An organised and differentiated cellular structure having cytoplasm but no nucleus is– **sieve tubes**	**AIPMT-1991**
Removal of apical bud results in– **formation of lateral branching**	**AIPMT-1993**
Aerenchyma is found in– **parenchyma**	**Punjab MET-2006 CG PMT -2004**
Stelar tissues like xylem and phloem, etc, arise from– **procambium**	**BCECE-2015**
Hard, lignified, thick walled, long and pointed cells in a plant are– **sclerenchyma**	**CG PMT-2005**
Tyloses are the structures found in xylem vessels– **all the time hinders the flow of water**	**Karnataka CET-2000**
In the sieve elements, the most likely function of P-proteins is– **Sealing off mechanism on wounding**	**JIPMER-2011 Rajasthan PMT-2010**
Sieve tube is– **without nucleus**	**Rajasthan PMT-1999**
The plant tissue having aquatic adaptation is– **aerenchyma**	**UP CPMT-2012**
Collenchyma is– **living and contains protoplasm**	**JCECE-2008**
The chief function of sieve tube element is– **to translocate the organic material from source to sink**	**Manipal-2006**
Tyloses thickenings are seen in– **ray parenchyma and xylem cells**	**BHU PMT-2004, UP CPMT-2001 Punjab MET-1999**
Lignification is associated with– **xylem**	**Punjab MET-2006 Rajasthan PMT-2004**
Oval, spherical or polygonal cells, thickening at the corners due to the deposition of cellulose, hemicellulose and pectin, often containing chloroplasts and having or not having intercellular spaces are called– **collenchyma**	**AMU-2015**
Vessels and companion cells are characteristics of– **angiosperm**	**BCECE-2005**
Porous wood contains– **vessels**	**BVP-2010**
Vessels and companion cells are absent in– **gymnosperm and pteridophyta**	**Rajasthan PMT-1996**
Xylem tissue is– **complex**	**UP CPMT-2010**

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Bark with phloem is removed in–	**girdling experiment**	**UP CPMT-2010**
Phloem conducts food by–	**perforated sieve plates**	**UP CPMT-2003**
The nature of cell occurring in medulla is–	**Parenchymatous**	**VMMC-2013**
The function of a vessel is–	**conduction of water and minerals**	**Manipal-2012, 2000 Punjab MET-2004**
The inter xylary phloem is found in–	**Calotropis stem**	**BHU PMT (Mains)-2011**
The plant tissue having aquatic adaptation is–	**aerenchyma**	**UP CPMT-2012**
Damaged sieve tubes are sealed by deposition of–	**Callus**	**BHU PMT (Screening)-2007 DUMET-2004**
The jute fibres anatomically are–	**Bast fibres**	**BHU PMT (Screening)-2007**
When sunflower leaf is exposed to sunlight, the solar radiations first pass through its upper epidermis and then through–	**palisade parenchyma**	**AMU-2011**
Medullary rays are made up of–	**parenchymatous cells**	**AMU-2010**
Growth rings are formed due to activity of–	**intrastelar cambium**	**MGIMS Wardha-2004**
Cotton fibres which are obtained from Gossypium are–	**surface fibre**	**VMMC-2006**
The layer of parenchyma surrounding a vascular bundle is known as–	**bundle sheath**	**VMMC-2006**
Collenchyma differs from sclerenchyma–	**retaining protoplasm at maturity**	**CG PMT-2007**
Phloem is related with transfer of–	**food material**	**Uttarakhand-2005**
Sieve tube cell is enucleate at–	**maturity**	**Uttarakhand-2005**
Compound sieve plates are found in–	**Vitis**	**AP EAMCET-2003**
Companion cells in plants are associated with–	**sieve elements**	**Haryana PMT-2004**
The waxy substance associated with cell wall of cork cells is–	**suberin**	**Haryana PMT-2004**
A tissue whose living cells form the mechanical tissue of actively growing organs and whose cell walls show cellulosic unlignified thickenings often at the corners of its cells is called–	**collenchyma**	**WB JEE-2014 JIPMER-2000**
Excessive aerenchyma is characteristic of–	**hydrophytes**	**JIPMER-2001**
The nature of sieve elements in the phloem are–	**Enucleated**	**AMU-1997**
Radial conduction of water takes place by–	**Ray parenchymatous cells**	**AMU-2012**
Wood is the common name of–	**Secondary xylem**	**CG PMT-2006**
Sugar would be insignificant amount in–	**Xylem sap**	**Manipal-2009 Karnataka CET-2009**
Xylem tissue helps in the flow of water in–	**Vascular plant**	**DUMET-2001**
Simple tissue with mechanical and physiological functions in a young dicotyledonous plant is–	**Collenchyma**	**AP EAMCET-2002 JIPMER-1996**
The crunchy and granular feeling when we chew pear fruit is due to–	**Sclerenchyma**	**CMC Ludhiana-2014**
Cell wall of xylem is rich in–	**Lignin**	**CG PMT-2010**
Anatomically jute fibres are–	**Phloem fibres**	**CG PMT-2010**
The sclerenchymatous part of pericycle which gives mechanical support is called–	**Bast fibres**	**AP EAMCET-2000**
An old trunk of shisham (*Dalbergia sissoo*) tree would possess maximum amount of–	**Secondary xylem**	**Rajasthan PMT-2011**
Tracheids differs from vessels in having–	**Bordered pits**	**Rajasthan PMT-2000, 2006**
The difference in phloem of gymnosperms and angiosperms is due to–	**Companion cell**	**Rajasthan PMT-2006,2002**
The stele, in the root of the following is tetrarch–	**Gossypium**	**AP EAMCET-1999**
Wilting of plant is because–	**xylem is blocked**	**BCECE-2010, VMMC-2007 BHU PMT WB JEE-2007 (Screening)-2006 UP CPMT-2002**
The longest plant cell is–	**Fibre**	**Rajasthan PMT-2000**
Bast fibres obtains from–	**Phloem of the stem**	**Rajasthan PMT-2000**
Anucleated living plant cell is–	**Sieve tube**	**AMU-2002**
Transport of food material in higher plants takes place through–	**Sieve elements**	**AIPMT (Mains)-2010**
Vascular tissues in flowering plants develop from–	**Plerome**	**JIPMER-2012**
Companion cells are closely associated with–	**Sieve elements**	**AIPMT (Screening)-2012**

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Sunken stomata are found in– Nerium	Manipal-2008, BVP-2008 Punjab MET-2008,2006 Uttarakhand PMT-2007 JCECE-2003 Rajasthan PMT-2002 J&K CET-2006
Vascular bundles, in which phloem is found on both sides of xylem are called– **Bicollateral**	HP CET-2011, JCECE-2008 Punjab MET-2007 BCECE-2006, VMMC-2005 AMU-2004 J&KET-2011,2003 BVP-2003 Rajasthan PMT -2001
The cells without nuclei are present in– **Members of sieve tube**	Punjab MET-2006 J&K CET-2006 JCECE-2003 Rajasthan PMT-2002
Cotton fibres is a useful product of– **Epidermal origin**	JIPMER-2012 Uttarakhand PMT-2009 BVP-2009, VMMC-2009
When the vascular cambium is present between the xylem and phloem, then the vascular bundle is called– **Open**	Karnataka CET-20.05.2023
Sunken stomata are in the leaves of– **Nerium**	TS EAMCET-10.05.2023, Shift-II
They have phloem both on outer and inner side of xylem– **Bicollateral bundles**	Rajasthan PMT-1997 AP EAMCET-05.10.2021 Shift-I
Velamen is found in– **Aerial roots of orchids**	AP EAPCET-07.09.2021 Shift-I
Large, empty colourless cells of the adaxial epidermis along the veins of grass leaves are– **Bulliform cells**	NEET-2020 Phase-II
Dumb-bell shaped guard cells are found in– **Grass**	AP EAMCET-24.09.2020 Shift-II
Water, mineral salts, some organic nitrogen and hormones– **Xylem translocate**	NEET-2019
Phloem in gymnosperms lacks– **Sieve tubes and companion cells**	NEET-2019
_____is composed of single layer of barrel shaped parenchymatous cells and forms a complete ring around the stele– **Endodermis**	SRM JEEE-2018
Vascular bundles are Xylem and Phloem present at the same radius in– **Conjoint**	Karnataka CET-2018
The vascular cambium normally gives rise to– **Secondary xylem**	NEET-2017
Phellem is made up of– **Dead cells**	NEET-2017
Multiple epidermis on dorsal and ventral side of the leaf is found in– **Nerium oleander**	CG PMT-2007
A vascular bundles without pith is– **Protostele**	BCECE-2008
Meristematic tissue in vascular bundle is– **Fascicular cambium**	JIPMER-2008
Opening and closing of stomata is due to the– **Change in Turgor pressure of guard cells**	AIPMT-2002
Peroxisomes are found in– **Mesophyll cells**	Manipal-2010
Idioblasts are specialized, non-green large sized– **Parenchyma cells**	UP CPMT-2013
Non-cellular layer that connects inner surface of the epithelial tissue to the connective tissue is– **Basement membrane**	UP CPMT-2013
At maturity the sieve plates become impregnated with– **Callose**	BCECE-2012 Kerala PMT-2009
Periderm is formed by– **Phelloderm, phellem and phellogen**	JCECE-2014, 2010
Vascular bundles in monocotyledons are considered closed because– **Cambium is absent**	AIPMT-2015
Tracheids differ from other tracheary elements in– **Being imperforate**	AIPMT-2014
A common structural feature of vessel elements and sieve tube elements is– **Enucleate condition**	JCECE-2013 AIPMT-2006
Companion cells in plants are associated with– **Sieve elements**	AIIMS-2004
A narrow layer of thin walled cells found between phloem/bark and wood of a dicot is– **Vascular cambium**	AIPMT-1993
A bicollateral vascular bundle is characterized by– **Xylem being sandwiched between phloem**	AIPMT-1992

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Amphivasal or leptocentric vascular bundles are found in– **Dracaena and Yucca**	**JIPMER-2002**
A component of xylem is– **Tracheid**	**CG PMT-2005**
Plasmodesmata is usually observed between– **Sieve tubes and companion cells**	**Karnataka CET-2013**
Cotton is a type of – **Epidermal tissue**	**DUMET-2002** **Punjab MET-2011**
In bicollateral vascular bundle the tissues found from out to inner side will be– **Outer phloem, outer cambium, xylem, inner cambium and inner phloem**	**Rajasthan PMT-1997** **Karnataka-2004**
Casparian strip is found in– **Radial and inner wall of endodermis**	**AMU-2011** **Rajasthan PMT-1997**
The term leptome is used for– **Phloem**	**Rajasthan PMT-2003**
Mature sieve tube lacks– **Nucleus**	**Rajasthan PMT-2001**
Angiospermic companion cell is associated with– **Sieve tube**	**Rajasthan PMT-2001**
Removal of ring wood of tissue outside the vascular cambium from the tree trunk kills it because– **Food does not travel down and roots become starved**	**BVP-2008** **UPCPMT-2002**
One of the characteristic of sieve tube is– **It is a part of phloem**	**WB JEE-2008**
A distinguishing feature of latex cells is that they are– **Single-celled elements with non anastomosing branches**	**AMU-2014**
Amphivasal vascular bundles are found in the stem of– **Dracaena**	**AP EAMCET-1998** **JIPMER-1998**
Companion cells have living– **Cytoplasm**	**VMMC-2011**
Epidermis and epiblema develops from– **Protoderm**	**BHU PMT-2002**
Endodermis is a part of– **Cortex**	**Rajasthan PMT-1996**
The cotton thread fibres are– **Epidermal hairs of seed**	**UP CPMT-2010**
Cystolith is a– **Calcium carbonate**	**AFMC-2000** **UP CPMT-2010** **BHU PMT (Screening) 2007**
Two cross-sections of stem and root appear simple, when viewed by naked eye. But under microscope the can be differentiated by– **Endarch condition of stem and exarch condition of root**	**AMU-2005** **Manipal-2004**
Protoxylem lacunae occur in– **Vascular bundles of grass stem**	**BHU PMT (Mains)-2009**
A common feature shared by guard cells and mesophyll cells is– **Presence of chloroplasts**	**Karnataka CET-2002**
The combination of tissues that acts together to provide the support to the hypocotyl of a seedling– **Epidermis and collenchyma**	**HP CET-2011**
The sclerenchyma of the hypodermis in the Pinus needle helps in– **Mechanical support**	**HP CET-2011**
The epidermal hairs present on the stem of the plant is called– **Trichomes**	**J&K CET-2014**
Lenticels are involved in– **Gaseous exchange**	**Kerala PMT-2015**
Vascular tissues in flowering plants develop from– **Plerome**	**BHU PMT (Screening)-2010** **AIPMT-2008**
In respect of many grasses, the presence of motor cells in the upper epidermis of leaves is to– **Check transpiration by reducing the surface area of the leaf**	**AMU-2011**
Piliferous layer in the root is– **Epidermis**	**AMU-2011**
In soil, water available for plants is– **Capillary water**	**HP CET-2013**
Guard cell, Trichomes and Root hair are part of a– **Epidermal layer**	**Rajasthan PMT-1998**
The shapes of stomata in Cynodon dactylon (doob) is– **Dump-bell shaped**	**Rajasthan PMT-1998**
The most primitive type of stele is– **Protostele**	**UP CPMT-2001**
Ectophloic siphonostele is found in– **Osmunda and Equisetum**	**AMU-2007**
In a plant organ which is covered by periderm and in which the stomata are absent, some gaseous exchange still takes place through– **Lenticels**	**Haryana PMT-2004**
The sugarcane plant has– **Dumb-bell shaped guard cells**	**Haryana PMT-2004**
Stele comprises consists– **Vascular tissue, pericycle and pith**	**Manipal-2013**
The monocotyledonous seed consists of one large and shield shaped cotyledon known as a– **Scutellum**	**J&K CET-2015**
Stomata open at night and close during day time in– **Succulents**	**WB JEE-2007** **JIPMER-1995**

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Cork cambium is also called– **Phellogen**	AMU-1997
The division of an individual vascular cambial cell results in the formation of– **One xylem and one phloem mother cell**	AMU-1997
Velamen of orchids are formed from– **Dermatogen**	CG PMT-2006
Nerium plant shows multiple– **Epidermis**	BHU PMT-2004
Atactostele vascular bundles are– **Scattered in the ground tissue**	MGIMS Wardha-2011
Sunken stomata are present in– **Xerophyte**	MGIMS Wardha-2011 VMMC-2010 WB JEE-2007
Guard cells swell due to a decrease in their water potential which occurs- **Stomata**	Manipal-2009
Distinguishing character of closed vascular bundles is– **Absence of cambium**	VMMC-2010
In plants, differentiation of procambium followed by the development of xylem and phloem is known as- **vascularisation**	Haryana PMT-2010 AIPMT-2000
The epidermal trichomes helps in– **Protection and reduction of transpiration**	J&K CET-2007
An open collateral bundle is one in which– **Xylem and phloem are separated by cambium**	BVP-2014,2012 MGIMS Wardha-2006
The ground tissue is undifferentiated in– **Monocot stem**	AP EAMCET-2000
The extension of pith between the vascular bundles as seen in the transverse section of a young dicot stem is called– **Medullary ray**	AP EAMCET-2000
Amphivasal vascular bundle possess– **Xylem around phloem**	Rajasthan PMT-2006
Protoxylem in Selaginella stem is– **Exarch**	AP EAMCET-1999
Vascular bundles in monocotyledons are considered closed because– **There is no secondary growth**	JCECE-2015
A student collected a hydrophyte with swollen and with a single vascular bundle in the root. The plant which he collected was– **Trapa**	Manipal-2010
The structure which contain vascular bundle and is modification of stem is– **Thorn**	AFMC-2010
In a vascular bundle, if xylem vessels develop in a centripetal fashion, the xylem is likely to be– **Exarch**	Karnataka CET-2008
Stomatal opening is regulated by– **Light**	UP CPMT-2005
Casparian strips are present in– **Endodermis**	UP CPMT-2005
Leptocentric (amphivasal) vascular bundles, (in which the whole phloem is enclosed by xylem) are characteristic feature of– **Dracaena and Yucca-Monocot**	UP CPMT-2014
Middle lamella is present– **Outside the primary wall**	UP CPMT-2011
Specialised epidermal cells surrounding the guard cells are called– **Subsidiary cells**	NEET-2016 Phase-I
Closed vascular bundles lack– **Cambium**	AIPMT (Screening)-2012
Some vascular bundles are described as open because these– **are capable of producing secondary xylem and phloem**	AIPMT (Mains)-2011
Ground tissue includes– **All tissues except epidermis and vascular bundles**	AIPMT (Screening)-2011
Raphides are crystals of– **Calcium oxalate**	UP CPMT-2006

Dicot and Monocot Root

Polyarch and tetrarch vascular bundles generally occur in these– **Monocot root and dicot root**	AP EAPCET-22.05.2023, Shift-I
The transverse section of a plant part showed polyarch, radial and exarch xylem, with endodermis and pericycle. The plant part is identified as– **Monocot root**	RE-NEET (UG)-06.06.2023 (Manipur)
Four radial vascular bundle are found in– **Dicot root**	Rajasthan PMT-2007 AIPMT-2002
A major characteristic of the monocot root is the presence of– **Vasculature without cambium**	AIPMT-2015
As compared to a dicot root, a monocot root has– **Many xylem bundles**	AIPMT (Mains)-2012
Passage cells are found in– **Monocot root**	AIIMS-2002
Epidermis is specialized for– **Absorption, respiration and protection**	Haryana PMT-2011
Triradiate vascular bundles can be traced in– **Dicot root**	Haryana PMT-2011

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In monocot roots, the types of vascular bundles are found– **Radial with exarch xylem**	BHU PMT-2003
Aerenchyma provides– **Buoyancy to hydrophytic plants**	Manipal-2004
Casparian strips are characteristic of– **Endodermis**	Haryana PMT-2004 Manipal-2003 AIPMT-1999
A monocot root is characterized by vascular bundles that are closed as well as– **Exarch, polyarch and radial**	AMU-1997
The vascular bundles of dicot roots are– **Exarch and radial**	AMU-1997
When secondary growth in thickness is initiated in a dicot root– **Parenchyma cells between xylem and phloem become meristematic**	VMMC-2015
Anatomically fairly old dicotyledonous root is distinguished from the dicotyledonous stem by– **Position of protoxylem**	AIPMT-2009
Fibrous root system is mostly found in– **Monocot plants**	J&K CET-2005
Dicot and Monocot Stem	
Lysigenous Cavities are seen in– **Monocot stems**	TS EAMCET-10.05.2023, Shift-II
Conjoint, collateral and closed vascular bundles are found in– **Monocot stem**	TS EAMCET 10.05.2023 Shift-I
Arrangement of vascular bundles and bundle sheath tissue in Monocot stem– **Scattered and Sclerenchyma**	AP EAPCET-23.05.2023, Shift-I
The common character present in both dicot and monocot stems is– **Conjoint vascular bundles**	AP EAPCET-23.05.2023, Shift-I
The organic food material is translocated through phloem in the stems of– **Dicot stems with conjoint, collateral, opened vascular bundles**	AP EAMCET-12.07.2022 Shift-II
The characters restricted to monocot Stem & Leaf respectively– **Lysigenous cavity and Bulliform cells**	AP EAMCET-03.09.2021 Shift-II
The innermost layer of the cortex is called– **Endodermis**	AP EAMCET-25.09.2020 Shift-II
Secondary xylem and phloem in dicot stem are produced by– **Vascular cambium**	NEET-2018
Grafting is successful in dicots but not in monocots because the dicots have– **Cambium for secondary growth**	AIIMS-2006
Maximum number of vascular bundles are present in– **Monocot stem**	BCECE-2008 UP CPMT-2006
Conjoint, collateral and closed vascular bundle is found in– **Monocot stem**	BCECE-2005
Vascular bundles closed in monocots because– **Vascular cambium is not present**	AIIMS-2010
Pith cavity occurs in the stem of– **Cucurbita**	AIIMS-2015
From the outside to the inside is– **Phellem – endodermis – pericycle – phloem**	AIIMS-2003
Pith and cortex do not differentiate in– **Monocot stem**	AIPMT-1988
Generally, a monocot stem bears vascular bundles– **Concentric and closed**	BHU PMT-2002
Grafting is not possible in monocots because they– **Lack cambium**	MGIMS Wardha-2007 BVP-2012, JIPMER-1995
If the dicot stem is stained for starch. The most intense colouration would develop in– **Endodermis**	VMMC-2006
In dicot stem secondary growth is due to the activity of– **Lateral meristem**	Manipal-2000
The meristem responsible for extrastelar secondary growth in dicot stem is– **Phellogen**	AMU-2006
In dicot stem, vascular bundles are– **Arranged in a ring**	CMC Vellore-2010, AMU-2009
Chronological sequence of cellular layers from the periphery towards the cortex in an old dicot stem is– **Epidermis, phellem, phellogen, phelloderm**	BVP-2013
A monocot stem with secondary growth is– **Yucca**	UP CPMT-2011
In barley stem vascular bundles are– **Closed and scattered**	AIPMT-2009
Water containing cavities in vascular bundles are found in– **Maize**	AIPMT (Screening)-2012 Rajasthan PMT-2011
Dicot and Monocot Leaf	
Monocot leaves possess– **Intercalary meristem**	AIPMT-1999
The part of the leaf between the upper epidermis and the lower epidermis is called– **Mesophyll**	JIPMER-1999

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Distribution of stomata occur in dorsiventral leaf– **More in spongy parenchyma and less in palisade tissue**	**Rajasthan PMT-1998**
The cells which help in rolling and unrolling of leaf lamina in grasses are– **Motor cells**	**AP EAMCET-2001**
Secondary Growth	
Duramen is present in– **Inner region of secondary wood**	**VMMC-2012 UP CPMT-2012, 2008 BCECE-2010 Uttarakhand PMT-2007**
Interfascicular cambium is present between– **Two vascular bundles**	**NEET (Re-Exam)-04.09.2022**
Vascular cambium produces– **Secondary xylem and secondary phloem**	**TS EAMCET-09.05.2019 Shift-I**
The cork cambium, cork and secondary cortex are collectively called– **Periderm**	**AIPMT (Screening)-2011**
In Cycas stem, open vascular bundle is characterized by– **Cambium present in between xylem and phloem**	**CMC Vellore-2009**
Jute fibres are obtained from the– **Secondary phloem**	**JIPMER-2015 DUMET-2009**
Cork cambium results in the formation of cork which becomes impermeable to water due to the accumulation of– **Suberin**	**AIIMS-2004**
Cork is formed from– **Cork cambium (phellogen)**	**AIPMT-1988**
Abnormal/anomalous secondary growth occurs in– **Dracaena**	**AIPMT-1993**
Examples for lateral meristems are– **Fascicular cambium and cork cambium**	**Karnataka CET-2009**
Secondary cortex is also known as– **Phelloderm**	**Karnataka CET-2012**
This pairs is an example for lateral meristem–**Phellogen and fascicular cambium**	**Karnataka CET-2010**
For a critical study of secondary growth in plants, the pair is suitable– **Teak and pine**	**AIPMT-2007**
Casparian thickenings are found in the cells of– **Endodermis of the root**	**Karnataka CET-2006**
The common bottle cork is a product of– **Phellogen**	**AIPMT (Screening)-2012**
Extrastelar secondary growth takes place by– **Phellogen**	**AIPMT-1998**
Transition of exarch bundles of root to endarch bundles of stem occurs in– **Hypocotyl**	**AIPMT-1999**
Spring and Autumn Wood	
In a ring girdled plant– **The root dies first**	**AIPMT-2015**
Age of the tree by counting the number of annual rings in the main stem– **Dendrochronology**	**BVP-2012 UP CPMT-2011, 2004**
Growth rings are formed due to activity of– **Intrastelar cambium**	**CMC Ludhiana-2012**
Annual rings are formed by period activity of– **Vascular cambium**	**JCECE-2014**
Diffuse porous wood is characteristics of those plants which are growing in– **Tropics**	**AIPMT-2003**
Porous wood contains– **Vessels**	**AIIMS-2001**
The trees growing in temperature regions show clear demarcation between spring wood and autumn wood. This is because– **The climatic conditions are not uniform throughout the year**	**Karnataka CET-2019**
Heart and Sap Wood	
Age of a tree can be estimated by– **Number of annual rings**	**NEET-2013**
A secondary growth proceeds, in a dicot stem, the thickness of– **Heartwood increases**	**AIIMS-2016 Karnataka CET-2006**
The inner, darker and harder portion of secondary xylem that can not conduct water, in an older dicot stem, is called– **Duramen**	**Karnataka CET-2005**
Tyloses are found in– **Secondary xylem**	**Karnataka CET-2010**
Tyloses an outgrowth from ray or axial parenchyma cell into the lumen of a vessel, which partially or completely blocks the cavity are present in– **Heart wood**	**JIPMER-2014**
Heartwood differs from sapwood in–**Having dead and non-conducting elements**	**AIPMT (Screening)-2010**

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07.

STRUCTURAL ORGANISATION IN ANIMALS

7.1 Animal Tissues

- Muscle tissue cells are contractile, means they– **Are specialized in contraction and relaxation**
- Mast cell secret– **Vaso constrictor (Serotonin)**
- Salt predominates in bone matrix– **Calcium phosphate**
- RBCs of mammals are– **Non-nucleated, biconcave and circular**
- Mast cells found in– **Areolar tissue**
- Exoskeleton originated from (e.g. nail, horn)– **Epithelium tissue**
- The cells lining the blood vessels belong to the category of– **Squamous epthelium**
- Epithelium forms the inner lining of lung alveoli, blood vessels and peritoneum of body cavity– **Squamous**
- Brush bordered cuboidal epithelium is present in the– **Proximal convoluted tubule**
- The epithelium found in the lining layer of stomach and intestine is– **Columnar**
- Fibres are absent in– **Blood**
- Matrix of connective tissue is composed of– **Modified polysaccharide**
- _____ is most abundant and widely distributed in the body of complex animals– **Connective tissue**
- It is derived from mesoderm and contains abundant matrix - **Connective tissue**
- Smooth muscles are– **Involuntary, fusiform, non-striated**
- Cuboidal epithelium with brush border of microvilli is found in– **Proximal convoluted tubule of nephron**
- Categories does adipose tissue belong– **Connective**
- Connective tissue is not a– **Muscles**
- Simple epithelial tissues – **Squamous Cuboidal Columnar Ciliated columnar**
- Lining of intestine of man is– **Brush-bordered**
- Squamous epithelium is found in– **Inner wall of blood vessels**
- The cell junctions namely tight, adhering and gap junctions are found in– **Epithelial tissues**
- Secretion of exocrine is not a– **Hormone**
- Areolar connective tissue joins– **Integument with muscles**
- The largest quantity of extracellular material is– **Areolar tissue**
- Bone is connected to muscles with the help of– **Tendon**
- Cartilage is formed by– **Chondrocytes**
- Specialised connective tissue is a– **Cartilage**
- Specialised connective tissue that provides structural frame to the body is– **bone**
- Cardiac muscle cells differ from striated muscle cells in having– **A centrally located nucleus**
- Cardiac muscles are different from skeletal muscles as they are– **Involuntary**
- The cells do not form layer and remain structurally separate– **Nerve cells**
- Part of nerve cells ..... receives impulses is– **Dendrite**
- Goblet cells are– **Unicellular**
- Salivary glands are– **Multicellular**
- Epithelium present in ducts of glands and tubular parts of nephrons is– **Cuboidal**
- Epithelium founds in the lining of stomach and intestine is– **Columnar**
- In columnar epithelium, nucleus present at which of these position in each cell of epithelium– **At the base**
- Function of adipose tissue is– **Energy reservoir**
- The type of cell junction, facilitates cell to cell communication is– **Gap junctions**
- Some of the columnar or cuboidal cells get specialised for secretion are called– **Glandular epithelium**
- One of the preparations, you are likely to come across cell junction most frequently. – **Ciliated epithelium**
- Connective tissue often serves as a support framework for epithelium– **Areolar tissue**
- On the basis of structural modification of the cells, simple epithelium is further divided into ..... types– **3**
- Fibroblast, macrophages and mast cells are seen in– **Loose connective tissue**
- Type of muscle tissue is found in the wall of internal organs– **Smooth muscles**
- Kind of tissue is found in the tip of nose, outer ear joints, between adjacent bones of the vertebral column, limbs and hands in adults– **Specialized connective tissue**
- Mucus, saliva, earwax, oil, milk and digestive enzymes are secreted by– **Exocrine glands**
- Tendons attach skeletal muscles to– **Bones**
- The involved in the rapid transfer of ions, small molecules and some big molecules– **Gap junctions**

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- Meant by a tissue is– **Group of cells of similar origin**
- The structure of the cell varies according to which of the following– **Function**
- Type of junction which helps to stop substance from leaking across a tissue– **Tight junction**
- Type of junction which facilitate the cells to communicate with each other by connecting the cytoplasm of each other– **Gap junction**
- Presence of intercalated disc is the feature of– **Cardiac muscle**
- The functions is not performed by epithelial tissue– **Conduction**
- Single thin layer of flattened calls with boundaries is observed in all of the following except– **Lining of oesophagus**
- Ciliated epithelia in human can be observed in– **Bronchioles**
- Cuboidal epithelin is observed in– **PCT**
- If the main function is diffusion and movement of mucus, then the epithelia will be respectively– **Squamous, ciliated**
- Endocrine glands secrete– **Hormones**
- Microvilli is present in the epithelium of– **Proximal convoluted tubule of nephron**
- The classification of glands is based on – **Mode of pouring of secretions**
- When a neuron is stinulated, the electrical signal travels along the– **Extracellular matrix**
- Epithelium with single layer of tall and slender cells with microvilli on their free surface occurs in– **Lumen of alimentary canal**
- That epithelium of the epithelium covers the inner linings of trachea, large bronchi and helps to remove mucus– **Ciliated epithelium**

7.2 Organ and Organ System

- Intercalated discs are the communication junctions between the cells of– **Cardiac muscles**
- Structures distinguish a nerve cell from other types of cell– **Cell body and Dendrites**
- Produce and secrete specialized compounds to control and maintain different body functions- **General function of gland**
- The only type of cell seen in a tendon is– **Fibroblasts**
- Yellow, white and Reticular fibres made up of protein– **Elastin, Collagen, Reticulin protein**
- Muscle contraction, Blood clotting and Bone formation is necessary in - **Ca^{2+}**
- Protein most abundant in human body is– **Collagen**
- Striated, involuntary with intercalated disc are - **Cardiac muscles**
- Inter vertebral disc are composed of– **White fibrous cartilage**
- Tendon connect– **Muscle to bone**
- _____ exerts greatest control over the response of body– **Nervous tissue**
- The connective tissue, mainly consists of yellow elastic fibres binds the bones together is known as– **Ligament**
- Bone forming cells which secrete ossein protein are called as– **Osteoblasts**
- Mucus cells (Goblet cells)– **Unicellular gland**
- Stratified squamous non-keratinised epithelium is present in the lining of– **Buccal cavity, oesophagus, cornea of eye**
- Fusiform (shape) muscles are– **Smooth and visceral muscles only**
- The complexity in organ and organ systems displays certain discernable trend. This discernable trend is called– **Evolutionary trend**
- Conventionally, the word anatomy refers to– **Study of morphology of internal organs**
- Human heart consists of– **Epithelial and connective tissues, Muscular and neural tissues**
- In case of animals, the external appearance of the organ or parts of the body refers to– **Morphology**

7.3 Earthworm

- Setae help in locomotion in earthworm but are not uniformly present in all the segments. They are present in– **20^{th} - 22^{nd} segment**
- Segment of earthworm bearing mouth is– **Peristomium**
- Pheretima posthuma lives within a burrow mainly to– **Get moisture**
- Clitellum in earthworm includes segments– **14, 15, 16**
- Setae are found in all body segments of earthworm except– **First, last and clitellar segments**
- Gizzard in Pheretima is an organ– **For Crushing food**
- Locomotion of earthworm involves– **Muscles and setae**
- Median mid dorsal line present along the length of an earthworm– **Dorsal blood vessel**
- Excretory organs in earthworm are– **Nephridia**
- In Pheretima, locomotion occurs with the help of– **Circular, longitudinal muscles and setae**
- The most common earthworm of India is– **Pheretima, Lumbricus**
- Present on the 5^{th} to 9^{th} segments of the earthworm's body– **Spermathecal apertures**

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7.4 Cockroach

- Male cockroach can be identified from the female by the presence of– **Anal styles**
- In cockroach, the testes are present in– **4, 5, 6 abdominal segments**
- Phallic organs in cockroach are related to– **Male reproductive system**
- Gizzard (proventriculus) in cockroach lies between– **Crop and mesenteron**
- The mouth parts of cockroach are– **Biting and chewing type**
- The features is used to identify a male cockroach from a female cockroach– **Presence of caudal styles**
- Pheretima and its close relatives derive nourishment from– **Decaying fallen leaves and soil organic matter**
- Correct structures of Pheretima is– **Clitellum - Secretes cocoon**
- Correct sequence of organs in the alimentary canal of cockroach starting from mouth– **Pharynx → Oesophagus → Crop → Gizzard → Ileum → Colon → Rectum**
- Tegmina in cockroach, arises from– **Mesothorax**
- Labial palp is a ..... organ– **Senseory**
- Triangular head of cockroach is formed by fusion of – **6 segments**
- Abdomen of cockroach consists of how many segments– **Ten**
- In female cockroach, which segment of sternum is boat shaped– **7th segment**
- Anal styles present in– **Male cockroach**
- Anal cerei present in– **Both male and female cockroaches**
- In cockroach, crop and gizzards are the parts of– **Foregut**
- Malphigian tubules are present at the junction of– **Midgut and hindgut**
- In cockroach, fat body, nephrocytes and urecose glands helps in– **Excretion**
- A pair of testes lying on each lateral side in the– **4th – 6th segment**
- In cockroach, sperms are nourished by– **Mushroom gland**
- Mushroom gland in cockroach present in which segments– **6th – 7th abdominal segment**
- In female cockroach, ovaries are found in– **2nd – 6th abdominal segment**
- Ovaries are present in cockroach– **2 large**
- Number of malpighian tubules present in cockroach– **100 – 150**
- Wings extend beyond the tip of the abdomen in– **Male cockroach**
- Dorsally placed sclerites in cockroach are termed as– **Tergites**
- Selerites in cockroach are joined together by– **Arthrodial membrane**
- Number of ommatidia in each compound eye of cockroach– **2000**
- In female cockroach, genital (or brood) pouch possess– **Female gonopore + collateral glands + spermathecal pore**
- Cockroach is– **is uricotelic**
- Types of eyes and vision in cockroach are respectively– **Compound eyes and mosaic vision**
- In cockroach, brain is represented by– **Supra-oesophageal ganglion**
- Zoological name of cockroach is– ***Periplaneta americana***
- A pair of spermathecae is found in cockroach in– **6th abdominal segment of female**
- Number of eggs in an oothecae of cockroach– **14 - 16**
- Cockroach excrete nitrogenous waste through A in the form of B. A and B are respectively– **Malpighian tubule, uric acid**
- If head of cockroach is removed, will happen– **It may live for few days**

7.5 Frog

- The sensory papillae in frogs are associated with– **Touch**
- Statements is true about frog– **They belong to class Amphibia**
- That methods are utilized by frogs for protection– **Mimicry**
- that structures protects the eyes of the frog in water– **Nactatins membrane**
- The chief nitrogenous waste material present in the urine of frog– **Urea**
- Frog receive sound signals– **Tympanum**
- *Rana tigrina* is zoological name of– **Frog**
- Male frogs can be distinguished from female frogs by the presence of– **Sound producing vocal sacs, Copulatory pad**
- Ova are laid by a female frog at a time– **2500 - 3000**
- The copulatory pads in male frog present– **First digit of the forelimbs**
- Frog is– **Oviparous**
- Respiratory organs of frog are– **Skin, Lungs**

7.6 Miscellaneous

- Adipose tissue belong– **Connective**
- Connective tissue is not a – **Muscles**
- Setae help in locomotion in earthworm but are not uniformly present in all the segments. They are present in– **20th – 22nd segment**
- Anal styles are absent in females cockroach– **True**
- Between the adjacent bones of the vertebral column, is present– **Cartilage**
- Connective tissue is not a– **Neuroglia**
- Cuboidal epithelium with brush border of microvilli is found in– **Proximal convoluted tubule of nephron**

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EXAM POIN

Tissue	
Vagina, oesophagus, urethra contain which type of tissue? **Stratified squamous epithelium**	Manipal-2010 AMU-2009 Punjab MET-2008 Uttarakhand PMT-2004
Thin filament of myofibril is made up of – **Actin, Tropomyosin and Troponin**	TS EAMCET 10.05.2023 Shift-I
The supportive skeletal structures in epiglottis and pubic symphysis of human being are the examples of– **Cartilage**	AP EAPCET-12.07.2022 Shift-I
The branch of "Histology" is also called ____ **Micro-Anatomy**	AP EAMCET-25.09.2020 Shift-I
Protective structure like nails, hoofs, hairs and horns in mammals are produced in and derivative of– **Stratum corneum and epidermal derivatives**	BVP-2013
Carotene pigment is found in the cells of – **Epidermis**	BVP-2012
Velamen tissues are associated with– **Absorption of moisture**	BCECE-2002
Integument is usually called jack of all trades' because – **performs various functions**	Haryana PMT-1999
Stratum germinativum is an example of which kind of epithelium – **Columnar**	Haryana PMT-2000
Epithelial Tissue and Junctions	
The ciliated epithelial cells are required to move particles or mucus in a specific direction. In humans, these cells are mainly present in – **Bronchioles and Fallopian tubes**	NEET (Re-Exam)-04.09.2022 NEET-2019 Karnataka CET-2017 JCECE-2012 BCECE-2012 AIPMT (Screening)-2011 WB JEE-2011
The lining of intestine and kidneys in humans is – **Brush border**	AP EAMCET-2011 Manipal-2008 BVP-2007 MGIMS Wardha-2006
Ciliated epithelium is present in – **Trachea**	VMMC-2007 Rajasthan PMT-2006, 2005 UP CPMT-2002
The type of epithelium that is found in proximal convoluted tubule of nephron is– **Simple cuboidal epithelium**	TS EAMCET 10.05.2023 Shift-I
Dense irregular connective tissue occurs in– **Deeper region of dermis of skin**	AP EAPCET-23.05.2023, Shift-II
The junction between epithelial cells that prevent the leakage of body fluids – **Tight junctions**	TS EAMCET-31.07.2022 Shift-II
Ciliated epithelium is found in– **Bronchioles and fallopians tubes**	TS EAMCET-29.09.2020 Shift-I
Goblet cells of alimentary canal are modified from– **Columnar epithelial cells**	NEET-2020 Phase-I
The endothelium of blood vessel is composed of – **squamous epithelium**	Punjab MET-1999
The epithelial cells lining the stomach of vertebrates is protected from damage by HCl because– **The epithelial cells are covered with a mucous secretion**	BVP-2010

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Tissue present in skin is– **Stratified squamous epithelium**	**UP CPMT-2010, 2007 JCECE-2008**
Pacinian corpuscles occur in the skin of certain parts of body in mammals. These are – **Encapsulated pressure receptors**	**AFMC -2011 Rajasthan PMT - 1998**
Fallopian tube is lined by– **Ciliated epithelium**	**VMMC-2002 Rajasthan PMT - 1998**
The secretion of tears, milk, sweat and oil are functions of which tissues– **Epithelial tissue**	**J&K CET-2012**
The type of epithelial cells, which line the inner surface of Fallopian tubes, bronchioles and small bronchi, are known as– **Ciliated epithelium**	**Rajasthan PMT-2010 AIIMS-2006, 2010, 2009**
Exposed surface of the human body is covered the tissue – **Stratified squamous epithelium**	**Rajasthan PMT-1998**
Cutaneous glands are– **Sebaceous glands**	**CG PMT-2007, 2006**
Pseudostratified epithelium is always– **Single layered**	**CG PMT-2007**
Most of the glands of the body are of– **Merocrine type**	**CG PMT-2007**
Cells of the epithelial tissue rest on a basement membrane, which is made up of– **Muco polysaccharides**	**CG PMT-2007**
Zonula adherens is another name for– **Terminal bars**	**Haryana PMT-2002 AIIMS-1994**
Mammary glands are modified– **Sweat glands**	**BVP-2013 Manipal-2003 Haryana PMT-2004**
Adjacent epithelial cells are held together by, means of– **Desmosomes**	**BVP - 2011 CMC Vellore - 2008 AMU-2006**
Brush bordered epithelium is found in – **Small intestine**	**JIPMER-2001 AIIMS-1995**
Nictitating membrane of man an example of – **Vestigial organ**	**Manipal-2013**
The tissue which covers the external surface of the animal body and the internal surface of visceral organs is – **Epithelial tissues**	**J&K CET-2015**
Epithelial cells of the intestine involved in food absorption have _____on their surface. **Microvilli**	**CG PMT-2006**
In simple epithelium, the cells are – **cemented directly to one another to form a single layer**	**Haryana PMT-2010**
The main function of sweat gland is – **Thermo-regulation**	**Haryana PMT-2003**
Salivary glands are present in– **Human**	**BVP-2015**
Stratum luciderm has a shiny substance called– **Eleidin**	**VMMC-2015**
Hair cells are present in skin they are– **epidermal in origin and made of dead cells**	**VMMC-2015 AIPMT-1993**
The cavities of alveoli of lungs are lined by– **Squamous epithelium**	**Kerala PMT-2008 J&K CET-2007**
The nature of sebaceous gland, present in dermis of majority of the mammals are – **Holocrine**	**BVP-2013**
Transitional epithelium is found in– **Urinary bladder**	**Haryana PMT-2011**
Melanin protect from– **U.V. rays**	**AIPMT-2002**
Proximal convoluted tubule (PCT) is lined with– **Simple cuboidal brush border epithelium**	**Kerala PMT-2008**
The thinnest skin is present on the– **Eyelids**	**J&K CET-2002**
The function of tracheal hair is to – **Pass mucus out**	**BVP-2003**

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The second layer of epidermis in rat integument is – **Stratum lucidum**	Kerala PMT-2009
The inner lining of the ducts of sweat glands and pancreatic duct is formed by the epithelium– **Stratified cubodial**	AP EAMCET-2014
The nasal chamber of rabbit has three thin twisted bony plates called conchae. They are lined by– **Simple ciliated columnar epithelium**	JCECE-2010
Part of epidermis that keeps out unwanted particles is called– **Ciliated epithelium**	KVPY SB & SX-2013
Schneiderian membrane is found in– **Nasal mucosa**	AIIMS-1995
Pseudostratified epithelium is found in – **Trachea**	AIIMS-2016 DUMET-2004
In lungs, the air is separated from the venous blood through– **Squamous epithelium + endothelium of blood vessel**	AIPMT-1997
The layer of actively dividing cells of skin is termed as – **Stratum malpighii/stratum germinosum**	AIPMT-1993
The epithelial cells lining the stomach of vertebrates is protected from damage by HCl because– **The epithelial cells are covered with a mucous secretion**	CMC Vellore-2012
Peyer's patches produce– **Lymphocytes**	Manipal-2002
Meissner's corpuscles occur in– **Skin**	WB JEE-2011
During the cold the hairs are raised and brought up more or less in vertical position by – **arrector pili**	J&K CET-2005
The layer of cells that secrete enamel of tooth is– **Ameloblast**	DUMET-2003
Epithelial cells in animals are held by specialized junctions, one of them being "Gap junction". Function of a "Gap junction" is to– **facilitate cell to cell communication by rapid transfer of small molecules**	KVPY SB & SX-2016
Epithelial tissue serves as – **protective sheath**	CG PMT-2004
Stratified epithelium is found in– **Nasal cavity**	JIPMER-2011 J&K CET-2011
The epithelium found in the inner linings of stomach and intestine is– **Columnar**	WB JEE-2015
The mucosal lining of food pipe of mammals is composed of – **Simple squamous and ciliated epithelium**	UP CPMT-2014
Characteristic of simple epithelium is– **They make a definite layer**	AIPMT-2000
A large proportion of oxygen is left unused in the human blood even after its uptakes by the body tissues. This O_2 – **acts as a reserve during muscular exercise**	AIPMT (Screening)-2011

Connective Tissue

Mast cells of connective tissue contain– **Heparin and histamine**	BCECE-2014 Uttarakhand PMT-2011 JIPMER-2011 Punjab MET-2010 CG PMT-2006 AIPMT-2004
Protein that are present in cartilage– **Chondrin**	Manipal-2012 AFMC-2002 JIPMER-2000 AIPMT-1997
Blood is a kind of– **Fluid connective tissue**	BCECE-2014 Jipmer - 2012 BVP-2009 Uttarakhand PMT-2009
Tissue which provides thermal insulation? **Adipose tissue**	AP EAMCET-12.07.2022 Shift-II
The supportive skeletal structures in epiglottis and pubic symphysis of human being are the examples of– **Cartilage**	AP EAPCET-12.07.2022 Shift-I
The white adipose tissue appears opaque due to _____. **large number of adipocytes**	MHT CET 5.10.2020 Shift-I

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A strong inextensible attachment of skeletal muscle to a bone is formed by – **Tendon**	VMMC-2011 CG PMT - 2005
Bone is mainly composed of– **Calcium and phosphorus**	WB JEE-2012
The outer covering of cartilage is called– **Perichondrium**	BVP-2010 WB JEE-2010
Fats are richly found in– **Adipose tissue**	Punjab MET-1999
Aging of an animal body is associated with deterioration in its– **Connective tissue**	BVP 2008 Uttarakhand PMT-2007
Ligament connects – **Bone to bone**	AMU-2005 Uttarakhand PMT-2004 Manipal-2004
Collagen fibers are characteristic of which tissue? **Connective tissue**	J&K CET-2012
Excessive pulling of ligaments between two bones cause– **Sprain**	AMU -2000
The blubber is formed by– **Adipose tissue**	AP EAMCET-2004
Heparin is secreted by – **Mast cell**	Haryana PMT-2005
Cartilage is produced by – **Chondroblasts**	JIPMER-2000 AIIMS-1994
Organ of Golgi is the sensing structure formed at the junction of– **Muscles and tendon**	AMU-2008
Major constituent of vertebrate bone is – **Calcium phosphate**	Haryana PMT-1999
Increase in capillary permeability is induced by– **Histamine**	AP EAMCET-2001
Tissue preparations signet ring appearance is obtained in – **Adipose tissue**	Haryana PMT-2004 Manipal-2003
Type of cartilage which is found in inter-vertebral disc of mammal– **Fibrous cartilage**	MGIMS Wardha-2009 WBJEE-2014
The type of connective tissue that is associated with the umbilical cord is– **Jelly – like connective tissue**	Manipal-2009 AP EAMCET - 2009
What will happen if ligaments are cut or broken– **Bone will become unfix**	AIPMT-2002
Achondroplasia is a disease related with the defect in the formation of – **Cartilage**	AIIMS-1994
Which steroid is used for transformation– **Cholesterol**	AIPMT-2002
Yellow bone marrow is found especially in the medullary cavity of – **long bones**	AIIMS-1996
Ligament is mainly made up of– **Collagen**	JIPMER-2008
The colour in the brown fat is due is– **A high concentration of iron containing cytochrome pigments**	AIIMS-2014
Histamine secreting cells are found in– **Connective tissues**	AIPMT-1989
Formation of cartilage bones involves – **deposition of bony matter by osteoblasts and resorption by chondroclasts**	AIPMT-1993
Tissue that contains fat globules is known as– **Adipose tissue**	JCECE-2002
The white fibres are resistant to stretching and formed of a substance, the protein collagen, which on boiling with water yields– **Gelatin**	CMC Vellore-2012
Adipocytes are mainly found in – **Connective tissue**	WB JEE-2007
Inter-vertebral disc consists of a shock absorber connective tissue known as – **Fibrocartilage**	CMC Vellore-2008
Embryonic connective tissue is derived from– **Mesenchyme**	BVP-2011
In bony vertebrates, the laying down of bone is often preceded by the presence of – **Cartilage**	Punjab MET-2005
Except blood, the cells of connective tissues secrete certain substances that act as matrix. These substances are – **Modified polysaccharides**	Kerala PMT-2013
The kind of tissue that forms the supportive structure in our pinna (external ears) is also found in - **Tip of the nose**	AIPMT-2009

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Identify the muscles that are ectodermal in origin– **Muscles of Iris and Ciliary body**	**AP EAPCET-12.07.2022 Shift-I**
The contractile element present in a striated muscle fibril, between two successive Z-lines, is called– **Sarcomere**	**CMC Vellore-2019** **AIIMS-1994**
Cells which lost their capacity to divide in order to get specialised– **Muscle cells and nerve cells**	**BVP-2010**
Type of muscles are found in heart– **Cardiac muscles**	**UP CPMT-2012**
Muscles of the heart are– **Striated, branched and involuntary**	**Kerala PMT-2015** **HP CET-2012**
The skeletal muscle fibre is a 'syncytium', which means it is– **Multinucleated**	**Kerala PMT-2015**
Stimulated resistance to passive strength is known as – **Muscle tone**	**Haryana PMT-1999**
Heart muscle is sensitive to – **Heat, chemical, electrical, mechanical**	**VMMC-2010**
Largest smooth muscle is present in ..... of pregnant woman. **Uterus**	**VMMC-2007** **UP CPMT-2002**
Cardiac muscles contract – **Quickly and unfatigued**	**BCECE-2002**
Striated muscles contract because of – **Sliding of actin rods on myosin rods**	**Uttarakhand PMT-2006**
Stimulus several times greater than threshold stimulus is provided to muscle fibre. It will – **Contract with same force**	**Uttarakhand PMT-2006**
Neural Tissue	
Cell which contains Nissl's granules– **Neurons**	**KVPY (SA)-2021** **Assam CEE-2014** **BVP-2001, 2008** **Uttarakhand PMT-2007** **DUMET-2006** **Uttarakhand-2005** **J&K CET-2001**
Cell of Schwann are associated with – **Nervous tissue**	**J&K CET-2014** **UP CPMT-2010** **Kerala PMT-2009** **UP CPMT-2007**
Oligodendrocytes are types of _____ . **Neuroglial cells**	**MHT CET-07.10.2020 Shift-I**
The longest cell of human body is– **Nerve cell**	**HP CET-2018**
The cells which cannot be grown under tissue culture conditions– **Nerve cells**	**DUMET-2003**
Nervous tissue originates exclusively from the .....of the embryo– **Ectoderm**	**Karnataka CET-2005**
..... mitosis does not takes place in– **Nerve cell**	**BCECE-2014** **Rajasthan PMT-1995**
What used to described as Nissls granules in a nerve cell are now identified as – **Ribosomes**	**BVP-2008**
Which is regarded as a unit of nervous tissue– **Neurons**	**Punjab MET-2010**
Nerve cells are the part of– **Nervous tissue**	**DUMET-2005** **UP CPMT-2003**
The most appropriate definition of neuroglial cell are that they are – **Non -sensory and supporting cell**	**VMMC-2013**
Lipofuscin granules are found in – **Nerve cell**	**BVP-2003, BCECE-2006**
Minimum regeneration power is present in– **Nervous tissue**	**VMMC-2007** **Rajasthan PMT-2005**
Collagen fibre are secreted by – **Fibroblasts**	**BCECE-2004**
Nodes of Ranvier are found in…….. **Axon**	**Karnataka CET-2004**
Earthworm	
The two organisms which breathe only through their moist skin are– **Leech and earthworm**	**AP EAMCET-12.07.2022 Shift-II** **BCECE-2015** **J&K CET-2012** **CG PMT-2008** **AMU-2008, VMMC-2008** **UP CPMT-2008** **Rajasthan PMT-2008**

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Earthworms are – **Ammonotelic**	**BCECE-2013** **CMC Vellore-2012** **BHU PMT (Mains)-2010** **CMC Ludhiana-2009** **JCECE-2007, 2009** **AFMC-2008** **AIPMT-2006**
Chloragogen cells of earthworms are analogous to vertebrate– **Liver**	**BVP-2008, 2014** **AFMC -2011** **Uttarakhand PMT-2007** **JIPMER-2006** **UP CPMT-2005** **MGIMS Wardha-2005** **Rajasthan PMT-1998** **AIIMS-1997** **JIPMER-1996**
The function of typhlosole in earthworm is to– **Increase absorptive area of intestinal epithelium**	**BHU PMT (Screening)-2011** **Manipal-2006** **BVP-2005** **Haryana PMT-2004** **Rajasthan PMT-2004** **Manipal-2003** **JIPMER-1995**
In a copulating pair of Pheretima posthuma which of the two processes take place- **Cross fertilization and reciprocal fertilization**	**MGIMS Wardha-2012** **HP CET-2011** **AP EAMCET-2011** **Rajasthan PMT-1999** **BCECE-2006**
Blood circulation in earthworm is – **Closed type**	**AIIMS-26.05.2019 Shift-I** **CMC Vellore-2011** **JCECE-2008** **UP CPMT-2006**
Blood of Pheretima is– **Red with haemoglobin in plasma**	**CMC Vellore-2011** **BVP-2010** **Punjab MET-2008** **Rajasthan PMT-1995** **AIPMT-1990**
The female genital pore of Pheretima posthuma located upon the segment– **14^{th}**	**VMMC-2012** **JIPMER-2009** **MGIMS Wardha-2008** **CG PMT-2008** **UP CPMT-2008** **Rajasthan PMT-2008**
Metanephridia is the excretory system in– **Earthworm**	**J&K CET-2013** **BCECE-2007** **BVP-2001** **AIIMS-2002** **AFMC-2000** **BCECE-2009** **Rajasthan PMT-2000**
Earthworms have no skeleton but during burrowing the anterior end becomes turgid and acts as a hydraulic skeleton. It is due to– **Coelomic fluid**	**Manipal-2012** **BHU PMT (Screening)-2010** **AIPMT-2009, 2008**
The function of Typhlosole in earthworm is– **Increasing the effective area of absorption in the intestine**	**Karnataka CET-20.05.2023** **TS EAMCET-11.05.2023, Shift-II**
In earthworm nerve ring is present– **Around the pharynx in the 3^{rd} and 4^{th} segments**	**TS EAMCET-11.05.2023, Shift-I**
Rows of S-shaped setae in the body of earthworm are present in all the segments, except– **The first, last and clitellum**	**Karnataka CET-2022**
Four pairs of spermathecae are located in 6th-9th segments in– **Earthworm**	**AIIMS-25.05.2019 Shift-I** **TS EAMCET-08.05.2019 Shift-II**

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In earthworm, the characteristic internal median fold of dorsal wall of the intestine called typhlosole is present in– **26 to 35 segments**	Kerala PMT-2008
Specialised chemoreceptors located on the anterior part of earthworms are – **Taste receptors**	Kerala PMT-2012
Efferent salivary ducts in Periplaneta open into base of – **Hypopharynx**	JCECE-2010
In earthworm, gizzard is found, in which segments– **9th segment**	UP CPMT-2009
Body of earthworm is divided into how many similar segments which are called metamers or somites– **100 - 120**	UP CPMT-2007
Microvilli of intestinal epithelium are similar in function with– **Typhlosole in earthworm**	AIIMS-2010
What is common between earthworm and Periplaneta– **Both have segmented body**	AIIMS-2012
One features which is common to leech, cockroach and scorpion– **Ventral nerve cord**	JIPMER-2010 AIIMS-2004
Earthworm possesses hearts– **4 pairs**	JCECE-2007 AFMC-2006 AIPMT-1991
In Pheretima, the number of ring vessels per segment in 12th and 13th segment, is– **12 pairs**	AP EAMCET - 2003 Uttarakhand PMT-2010
Silicates consumed along with food by Pheretima and excreted by– **Chloragogen cells**	Uttarakhand PMT-2010
If an earthworm is left in 40% KOH solution for a long time, which part would be left undissloved– **Setae**	Punjab MET-2007
Dorsal blood vessel of the earthworm are distributed in which segments of the body– **The first 13 segments**	Punjab MET-2007
The part of spermatheca of earthworm that acts as store house of spermatozoa is – **Diverticulum**	Punjab MET-2007
The most commonly occurring species of an earthworm in India is– **Pheretima posthuma**	BCECE-2015
In earthworms setae are present in all segments except the – **First, clitellum and last segments**	Kerala PMT-2011 Rajasthan PMT-1995
Organs in earthworm which neutralizes humic acid present in humus – **Calciferous glands**	J&K CET-2013 DUMET-2011
Integumentary nephridia are also called– **Exonephric**	DUMET-2004
In Pheretima, septa are absent between which segments– **3/4 and 9/10**	JIPMER-2009 Rajasthan PMT-2008 CG PMT-2008
Parasite which is present in seminal vessicle of Earthworm – **Monocystis**	Rajasthan PMT-1999
Segments of Earthworm are called – **Metamere**	Rajasthan PMT-1999
Haemoglobin in Earthworm is present in – **Plasma**	MGIMS Wardha-2012 Rajasthan PMT-1999
In earthworm the dorsal wall of the intestine from the 26th segment to 95th segment forms a median internal fold called– **Typhlosole**	CMC Vellore-2008
Effective organ for intake of food in Earthworm is – **Pharynx**	Rajasthan PMT-1995
Function of chloragogen cells of Earthworm is– **Excretion**	Rajasthan PMT-1995 Manipal-2006
The function of clitellum in Pheretima is– **Formation of cocoon**	Rajasthan PMT-1997, 2002 BVP-2010 JCECE-2003

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The nephridia, in earthworm, are analogous to – **Flame cells of Planaria**	**VMMC-2004 Rajasthan PMT-1995**
In earthworm, the circular muscles are highely develop in– **Gizzard**	**Manipal-2006**
For storage of sperm obtained from male earthworm during copulation and used in future is – **Spermathecae**	**Rajasthan PMT-1998 AFMC-2005**
Life span-of Earthworm is– **$3\frac{1}{2}$-10 yrs**	**Rajasthan PMT-1996**
Copulation of Earthworm lasts for– **1 hrs**	**Rajasthan PMT-1996**
Role of chromophill cells of Earthworm pharynx is– **Saliva secretion**	**Rajasthan PMT-1996**
Earthworms have no special sense organs. Still they are sensitive to – **Touch, taste and light**	**BVP-2008 Uttarakhand PMT-2007 JIPMER-1996**
If the skin of earthworm becomes dry, it dies due to – **Asphyxia**	**AFMC -2011**
Protozoan living in the seminal vesicles of earthworm is– **Monocystis**	**Rajasthan PMT-2006 JIPMER-1997**
The structure in earthworm which serves as a wedge to force open cracks in the soil is– **Prostomium**	**Kerala PMT-2015**
Nephrostome is a component of – **Septal nephridia**	**Rajasthan PMT-1998**
The lateral hearts in earthworm have– **Four pairs of valves and are situated in segments 7 and 9**	**AMU-2010**
An evolutionary pattern characterized by a rapid increase in the number and kinds of closely related species is called – **Adaptive radiation**	**AMU-2010**
The colour of the body in earthworm is brown due to the presence of–**Porphyrin**	**UP CPMT-2001, 2013 HP CET-2012 VMMC-2004**
Four pairs of pulsatile heart in Pheretima are located in segments–**7, 9, 12 and 13**	**CG PMT-2007**
In Pheretima, locomotion occurs with the help of – **Circular, longitudinal muscles and setae**	**J&K CET-2006 Rajasthan PMT-2002**
Blood of animals does not carry O_2– **Earthworm**	**JIPMER-1995**
The function of blood gland in Pheretima is– **Production of phagocytes**	**AP EAMCET-2001**
Spermatophores of Pheretima are formed due to secretions of– **Prostate glands**	**AP EAMCET-2001**
Haemoglobin is found dissolved in the plasma of– **Earthworm**	**CMC Ludhiana-2010 DUMET-2007**
In Pheretima, the red coloured round bodies in 4th, 5th and 6th segment above the alimentary canal are believed to be involved in– **Leucocyte production**	**AP EAMCET-2005**
Fertilization in earthworm occurs in– **Cocoon**	**UP CPMT-2005**
Earthworm is – **Oligochaeta**	**UP CPMT-2011**
During the development of zygote of earthworm micromeres develop into– **Endoderm**	**AP EAMCET-2007**
A transverse section of Pheretima taken through the 10^{th} segment is observed in microscope. Which of the following structures can be observed in the section– **Stomach, Dorsal blood vessel, Ventral blood vessel, Supra-oesophageal vessel, Anterior loops, Ring vessel and Micronephridia**	**AP EAMCET-2007**
In Pheretima, gizzard, buccal cavity, pharynx, oesophagus and pharyngeal nephritides receive the blood from which blood vessel– **Dorsal blood**	**AP EAMCET-2009**
The location of lymph glands in Pheretima is– **26^{th} to the last segments**	**AP EAMCET-2009**
Forests of nephridia are present in– **Clitellar region**	**UP CPMT-2002**

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Cockroach	
Heart of cockroach is – **13 - chambered**	**Tripura JEE-2022** **TS EAMCET-12.05.2017** **BCECE-2015** **Manipal-2005, 2014** **VMMC-2013** **CMC Vellore-2009** **Rajasthan PMT-2009** **UPCPMT-2009** **Punjab MET-2009** **AFMC-2005**
Cockroach has 'superposition vision'. This type of vision has the following characteristic features 'EXCEPT'– **It produces Mosaic Vision**	**TS EAMCET-02.05.2018 Shift-I** **J&K CET-2006** **Punjab MET-2006** **Rajasthan PMT-2002** **NEET (Odisha)-2019** **Rajasthan PMT-1999**
In cockroach, larval and nymphal characters are maintained by– **Juvenile hormone**	**VMMC-2012** **UP CPMT-2008, 2012** **UP CPMT-2012** **JIPMER-2009** **CG PMT-2008** **Rajasthan PMT-2008**
Infant/Juvenile stage of Cockroach is called– **Nymph**	**VMMC-2014** **UP CPMT-2013** **JCECE-2012** **Rajasthan PMT-2004, 1995**
The Cockroach is– **Uricotelic only**	**RE-NEET (UG)-06.06.2023 (Manipur)**
Presence of anal styles regarding sexual dimorphism is characteristic feature of – **Male Cockroach**	**NEET (UG) 07.05.2023**
In cockroaches, digestive juice is secreted by the– **Hepatic caeca**	**NEET (Re-Exam)-04.09.2022** **Kerala PMT-2012**
Tegmina in cockroach, arises from– **Mesothorax**	**NEET-2022**
Number of rectal papillae present in cockroach– **Six**	**TS EAMCET-09.08.2021 Shift-II**
In corpora adipose of cockroach, function of oenocytes is– **Store lipids**	**TS EAMCET-09.08.2021 Shift-II**
In a certain taxon of insects (Example: Cockroach), some have 17 chromosomes and the others have 18 chromosomes. The 17 and 18 chromosomes bearing organisms are _____ **Males and females respectively**	**AP EAMCET-06.09.2021 Shift-I**
The inner surface of labrum of cockroach bears_____ **Gustatory Sensillae**	**AP EAMCET-06.09.2021 Shift-I**
Anus in cockroach occurs on ———— **Ventral surface of 10th tergum**	**AP EAMCET-03.09.2021 Shift-I**
What external changes are visible after the last moult of a cockroach nymph —— **Both fore wings and hind wings develop**	**AP EAMCET-03.09.2021 Shift-I**
Digestion in Periplaneta begins in _____ **Pre oral cavity**	**AP EAMCET-03.09.2021 Shift-II**
Stomodeal valve is formed from – **Gizzard**	**TS EAMCET-09.08.2021 Shift-I**
In cockroach, the ootheca are formed by secretion of _____ **Collateral gland**	**AP EAPCET-07.09.2021 Shift-I**
How many Terga are visible in male cockroach– **9**	**AP EAMCET-05.10.2021 Shift-I**
True coelom of cockroach occurs ____ **Around gonads**	**AP EAMCET-05.10.2021 Shift-I**
Efferent salivary ducts in Periplaneta open into– **Base of hypopharynx**	**TS EAMCET-28.09.2020 Shift-II** **AP EAMCET-2007**

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In cockroach, ootheca around the eggs is secreted by– **Collaterial glands**	TS EAMCET-28.09.2020 Shift-I
Triangular joint in the leg of Periplaneta is– **Trochanter**	TS EAMCET-28.09.2020 Shift-I
Arthrodial membrane in cockroach _____ **Joins sclerites together**	AP EAMCET-24.09.2020 Shift-II
In cockroach, the parts of the foregut in correct sequence– **Mouth → Pharynx → Oesophagus → Crop→ Gizzard**	NEET-2020 Phase-II NEET-2019
Alary muscle is associated with– **Heart and circulation**	TS EAMCET-08.05.2019 Shift-I TS EAMCET-02.05.2018 Shift-II AMU-2008 VMMC-2008 UP CPMT-2002
The cells of fat body of cockroach which contain symbiotic bacteria are– **Mycetocytes**	TS EAMCET-08.05.2019 Shift-II
Thermoreceptor sensillae of cockroach are present on– **Tarsus of legs**	TS EAMCET-08.05.2019 Shift-II
In cockroach, thermo receptor sensillae are present on– **First three segments of the tarsus of legs**	AP EAMCET-24.04.2019 Shift-I
In cockroach– **Phallic gland opens in left phallomere**	AIIMS-26.05.2019 Shift-I
The sense organs present on proximal parts of tibia in Cockroach are sensitive to– **Ground vibrations**	AP EAMCET-25.04.2018 Shift-II
In cockroach, if the sub-oesophageal ganglion is damaged, which part of the cockroach is affected– **Wings and legs**	TS EAMCET-02.05.2018 Shift-I
In female cockroach, each ovary consists of– **8 ovarioles**	Tripura JEE-2017
The number of abdominal segments in male and female cockroach is– **10, 10**	Kerala PMT-2008
In Periplaneta, ductus ejaculatorius of male reproductive system lies in– **7th segment**	AP EAMCET-2014
Blatta orientalis can be distinguished from Periplaneta americana in that the female of Blatta is with– **Vestigeal wings**	AIIMS-1998
The body cells in cockroach discharge their nitrogenous waste in the haemolymph mainly in the form of– **Potassium urate**	AIPMT (Re-Exam)-2015
Two common characters found in centipede, cockroach, and crab are– **Jointed legs and chitinous exoskeleton**	AIPMT-2006
Ommatidia serve the purpose of photoreception in– **Cockroach**	AIPMT-2003
Tracheae of cockroach and mammal are similar in having– **Noncollapsible walls**	AIPMT-1993
Periplaneta has no respiratory pigment in its blood because– **Air is conducted directly to body tissues**	Punjab MET-2006
The dorsal plate of skeleton found on the abdomen of cockroach is called– **Tergum**	Punjab MET-2007
The arrangement of leg parts of cockroach is– **coxa, trochanter, femur, tibia and tarsus**	Punjab MET-2007
In the female cockroach the anterior wall, roof and floor of genital pouch are formed respectively by which abdominal sterna of– **7th, 8th and 9th segments**	AP EAMCET-2016
The taste receptors of cockroach are– **Palps of maxillary and labium**	DUMET-2006
Fertilized eggs of P. americana are encased in– **Ootheca**	DUMET-2011

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The egg case in female cockroach is formed by the secretions of– **Collateral glands**	**Manipal-2002 AIIMS-2000 AP EAMCET-1998**
Changing of a small Cockroach into adults is known as– **Metamorphosis**	**Rajasthan PMT-1999**
The two parts of Periplanata appear similar in structure fundamentally is– **Legs and maxillae**	**Manipal-2014**
Conglobate gland is found in– **Male cockroach**	**Manipal-2005, 2014**
The part of cockroach exoskeleton is invaginated in– **Stomodium and Proctodium**	**Rajasthan PMT-1995**
Metamorphosis in cockroach is– **Incomplete**	**Rajasthan PMT-1995**
Super position image formation takes place in cockroach during– **Dim light**	**CMC Vellore-2011**
Cellulose digesting zooflagellate found in wood cockroaches is– **Trichonympha**	**Punjab MET-2005**
In cockroach, the arthrodial membrane– **Joins the sclerites**	**Kerala PMT-2014**
Functionally heart of cockroach is– **Neurogenic**	**Rajasthan PMT-1996**
Externally male and female cockroach can be differentiated by– **Length of abdomen**	**Rajasthan PMT-1996**
Mushroom gland is a part of– **male reproductive system of cockroach**	**UP CPMT-2010**
In cockroach, the longest podomere is– **Tibia**	**VMMC-2013**
Stink glands are present between these abdominal segments in cockroach– **5th and 6th terga**	**JCECE-2008, UP CPMT-2007 AP EAMCET-2003, 2002**
Abdominal ganglia in cockroach are found in segments– **1, 2, 3, 4, 6 and 7**	**AP EAMCET-2003**
Moulting hormone is secreted by– **Prothoracic gland**	**Haryana PMT-2005**
Hepatic caecae in cockroach are derived from– **Midgut**	**JIPMER-2000**
Reduced, functionless mandibles present in– **Butterfly**	**AP EAMCET-2001**
The endoskeleton in the head of cockroach is known as– **Tentorium**	**CG PMT-2011**
The number of valves in the gut of cockroach is– **2**	**AP EAMCET-2000**
The palpiger of cockroach bears– **Labial palp**	**AP EAMCET-2000**
In Periplaneta the cuticular lipid is secreted by– **Oenocyte cells**	**Rajasthan PMT-2000**
In cockroach, the female genital pore is located at the centre of– **8th sternum**	**AP EAMCET-1999**
The pincer like structures present on the stipes of maxilla of cockroach are– **Lacinia**	**AP EAMCET-1999**
Haemolymph of cockroach contains– **Haemocytes and plasma**	**JCECE-2015**
Mouth part type in mosquito is– **Sucking and piercing type**	**CMC Ludhiana-2010**
The cutting organ in the mouth parts of cockroach is– **Mandible**	**Karnataka CET-2012**
Cockroaches can climb smooth or steep surfaces due to the presence of adhesive pads found on the tarsus of their legs. They are called– **Arolium**	**Karnataka CET-2010**
Six highly chitinous plate-like teeth are found in– **Gizzard of cockroach**	**JIPMER-2014**
In Periplanata, two pair of wings are parts of thorax, these exoskeleton (I and II pair of wings) of insect arise from– **Mesothorax and metathorax respectively**	**UP CPMT-2014**
The sclerite that covers the top to the head and the space between the two compound eyes in Periplaneta is– **Vertex**	**AP EAMCET-2006**
The cells, present in the fat bodies of cockroach, which contain symbiotic bacteria that synthesise amino acids are– **Mycetocytes**	**AP EAMCET-2010**
In cockroach, the thermo-receptor sensilla are present on– **First, second and third tarsomeres of tarsus**	**AP EAMCET-2010, 2007**
Organ of mastication in cockroach is– **Mandibles**	**Rajasthan PMT-2005 UP CPMT-2002**
The number of heart chambers found in cockroach is– **13**	**UP CPMT-2009 Punjab MET-2009**

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Frogs		
Frog diaphragm has no role in–	**Respiration**	**AP EAMCET-25.09.2020 Shift-II HP CET-2012 AMU-2005 Manipal-2003 VMMC-2004 AP EAMCET-1998 BVP-2005**
Bidders canal is present in–	**Male frog**	**JCECE-2014 AP EAMCET -2011 Rajasthan PMT-2009 Punjab MET-2009 UP CPMT-2009 UP CPMT-2006**
Different colour of frog skin are controlled by–	**Hormones**	**JCECE-2012, 2014 BVP-2012 Uttarakhand PMT-2008 Manipal-2008 MGMIS Wardha-2006 BCECE-2001**
Blastula of frog has–	**Blastocoel**	**BCECE-2014 BVP-2007, 2012 Uttarakhand PMT-2008 Manipal-2005, 2008 MGMIS Wardha-2006**
In frog the vertebra, with an anterior convex surface, is–	**9th vertebra**	**AFMC-2002 Punjab MET-2003 UP CPMT-2001 AP EAMCET – 1997,2000**
The egg of frog is–	**Mesolecithal and Telolecithal**	**AMU-2005 Uttarakhand PMT-2004 Manipal-2000, 2004 Rajasthan PMT-2000, 2004 Punjab MET-2004 BVP-2001**
Functional kidney of frog tadpole is–	**Pronephros**	**Manipal-2011 HP CET-2011 BVP-2003 VMMC-2005 AMU-2004**
Mesonephric kidney are–	**Excretory organs of frog**	**UP CPMT-2012 HP CET-2013 BCECE-2001 Haryana PMT-2001 AIPMT-1997**
Metamorphosis of Frog from tadpole to adult is controlled by–	**Thyroxin**	**Manipal-2005 Rajasthan PMT-2001 AIIMS-1999 DUMET-2005 UP CPMT-2003**
In frog heart, there are cardiac muscles which consists of fibres called–	**Purkinje fibres**	**VMMC-2012 UP CPMT-2008, 2012 CG PMT-2008 JIPMER-2009**
The functions of diencephalon in frog's brain–	**Perception of heat, cold and integrity of autonomous system**	**AP EAPCET-23.05.2023, Shift-I**

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The poison gland found in the skin of all frogs is called– **Parotid gland**	**Tripura JEE-2022**
The skull of frog and rabbit is– **Dicondylic**	**TS EAMCET-02.05.2018 Shift-II** **JIPMER-1998**
Presence of gills in the tadpole of frog indicates that– **Frogs evolved from gilled ancestors**	**AIPMT-2004**
In the development of frog the blastopore forms the future– **Anus**	**AIIMS-1998**
Plica semimularis is found in– **Eyes of frog**	**AIIMS-1998**
Differentiate a frog from a toad– **Frog has no parotid glands but toad has a pair of parotid glands**	**Karnataka CET-2011**
Acoelus vertebrae in frog is– **Atlas vertebrae**	**UP CPMT-2007**
In frog chromosome number is reduced half– **When 1st polar body is separated**	**JIPMER-2005**
The ganglia of sympathetic and the central nervous system in frog develops from the– **Neural crest cells**	**AIIMS-2002**
Skin is an accessory organ of respiration in– **Frog**	**AIPMT-1990**
The roof of the cranium of frog is formed by– **Frontoparietal**	**AIPMT-1997** **Haryana PMT -2000**
In frog, the surface of attachment of tongue is– **Hyoid apparatus**	**AIPMT-1997**
Bullfrog of India is– ***Rana tigrina***	**AIPMT-1992**
Addition of a trace of thyroxine or iodine in water containing tadpoles will– **Hasten their metamorphosis**	**AIPMT-1990**
Tadpole's tail is a– **Locomotory organ**	**AFMC-2003**
Shifting of ammonotelism to ureotelism is seen in– **Frog**	**WB JEE-2007**
The centum in typical centrum of frog is– **Amphicoelous**	**CMC Vellore-2015**
Salivary glands are absent in– **Rana hexadactyla**	**AP EAMCET-1998**
Flying frog′s scientific name is– **Rhacophorus**	**AP EAMCET-1998**
A cup like cavity located on the each side of pectoral girdle of frog is– **Glenoid cavity**	**Manipal -2006** **Manipal-2014**
Grey crescent is present in– **Fertilized egg of frog**	**Karnataka CET-2000**
Food of tadpole (Frog) is– **Aquatic animals**	**Rajasthan PMT-1995**
Fully mature larva of frog respire by– **Gills**	**BCECE-2001**
Frogs and toads belong to the order– **Anura**	**CMC Vellore-2011**
In Frog the ear has– **Ear drum and internal ear**	**Haryana PMT-2000**
Wolffian body also known as– **Mesonephros**	**Punjab MET-2005**
A renal portal system is found in– **Frog**	**Uttarakhand PMT-2011** **BCECE-2011**
The main difference between RBCs of human and frog is– **Human RBCs are non-nucleated**	**BVP-2010** **JCECE-2004** **Haryana PMT-2003**
In an egg of frog is divided in a way that one part has animal hemisphere and another part is deficient in that then– **Only animal hemisphere region forms embryo**	**Rajasthan PMT-1996**
Spinal nerves in frog are– **10 pairs**	**UP CPMT-2010**
This is absent in frogs heart– **Inter ventricular septum**	**JIPMER-1998**
The third cleavage of frogs egg is of– **Transverse and unequal type**	**JIPMER-1998**
The type of cleavage is found in frog is– **Holoblastic unequal**	**UP CPMT-2012, 2010** **JIPMER-1997**

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Skin plays a very important role in osmoregulation in frog by– **Osmotic inflow of water**	**JIPMER-1997 DUMET-2001**
Frogs have– **Have Lymphatic system**	**Kerala PMT-2015**
V^{th} Cranial nerve of frog is called– **Trigeminal**	**MGIMS Wardha-2008, 2010 UP CPMT-2006 BVP-2001**
In the development of frog, the gastrulation process involves– **Emboly, epiboly and invagination**	**UP CPMT-2001**
During hibernation period, frogs respiration is– **cutaneous**	**Uttarakhand-2005**
In frog chromosome number is reduced to half– **When 1st polar body is separated**	**Haryana PMT-2005**
In frog jelly around the eggs is deposited in the – **Oviduct**	**AMU-2008 VMMC-2008**
Frog is– **Ureotelic**	**VMMC-2008 AMU-2008**
Structure present in man absent in frog– **Salivary gland**	**AMU-2008**
Absence of thumb is characteristic of– **Frog**	**Haryana PMT-1999**
Endostyle is present in– **Ascidian tadpole**	**AP EAMCET-2001**
The function of iris in the eyes of frog is to– **Alter the size of pupil**	**VMMC-2010**
In frog, according to modern theory of blood circulation, the trabeculae help in– **Increasing the inner surface area of ventricle**	**AP EAMCET-1997**
In frog, innominate vein is formed by the union of the veins– **Subscapular and internal jugular**	**AP EAMCET-2000, 1999**
In Frog, Astragalus, is a part of– **Ankle**	**AP EAMCET-2000, 1999**
In frog skull, the bone that connects sphenethmoid with maxilla– **Palatine**	**AP EAMCET-1999**
In frog, the nerve that innervates the retractor bulli muscles of the eye– **Abducens nerve**	**AP EAMCET-1999**
In frog coracoids fenestra is associated with– **Pectoral girdle**	**AP EAMCET-1999**
Acoustic spots in frog are present in– **Membranous labyrinth**	**VMMC-2007**
Cloacal aperture of frog is used to pass out– **Faeces, sperm and urine**	**AFMC-2010**
The fourth cleavage plane during development of frog's egg is– **Double meridional**	**Karnataka CET-2012**
A gradual decrease in the size of the tail during metamorphosis in the life cycle of frog is a good example for– **Programmed cell death**	**Karnataka CET-2008**
Cleavage in frog's zygote is– **Holoblastic**	**UP CPMT-2005**
Number of cranial nerves in frog– **10 pairs**	**UP CPMT-2005 JIPMER -2006**
Bidder's canal is found in– **Kidney of frog**	**UP CPMT-2011**
In frog, the vertebra with an anterior convex surface (i.e. double convexties) is– **9^{th} vertebra**	**JIPMER-2004**
The epithelial lining in the alveoli of the frogs facing lung cavity is– **Columnar ciliated**	**JIPMER-2004**
Carotid labyrinth contains– **Baroreceptors**	**JIPMER-2015**
Acoustic spots in frog are present in– **Membranous labyrinth**	**UP CPMT-2002**

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08.

CELL : THE UNIT OF LIFE

8.1 An Overview of Cell & Cell Theory

- Cell organelle is known as protein factory– **Ribosome**
- Small bristle like fibres sprouting out of the bacterial cell is– **Fimbriae**
- The animal cell is different from a plant cell in having– **Centrosomes**
- The model given by Singer and Nicolson in ____ was _____ for plasma membrane– **1972, fluid mosaic model**
- The main chemical component of fungal cell wall is– **Chitin**
- The surface of RER has– **Ribosomes**
- ____ cell organelle is responsible for the synthesis of steroids and lipids– **SER**
- RER are found in the cells actively involved in– **Protein synthesis**
- _____ is common in both ER and Golgi complex– **Cisternae**
- A number of proteins synthesised by ribosome present on the ER are transferred to– **Golgi apparatus**
- Cell organelle is involved in the synthesis of the cell organelle that contains hydrolytic enzymes– **Golgi apparatus**
- _____ help in osmoregulation in Amoeba– **Contractile vacuoles**
- The vacuoles which help in the digestion of food particles engulfed by protists are– **Food vacuoles**
- The stain is used to observe mitochondria– **Janus green**
- Cell organelle is known as powerhouse of the cell– **Mitochondrion**
- The inner membrane of mitochondria forms a number of infoldings called– **Cristae**
- The type of ribosomes found inside the mitochondria is– **70S**
- The plastids, store proteins are– **Aleuroplasts**
- _____ plastid is coloured and contains carotenoids– **Chromoplast**
- _____ plastid contains chlorophyll which is responsible for photosynthesis– **Chloroplast**
- The orange colour of carrot root due to the presence of– **Chromoplast**
- Centrosome is an organelle containing two cylindrical structures called– **Centrioles**
- The nucleus was discovered by ____ in _____ **Robert brown, 1831**
- Common character in mitochondria, chloroplast and nucleus is– **They are double membrane bound organelles**
- The structure present inside the nucleus responsible for ribosomal unit formation is– **Nucleolus**
- Chromatin found in nucleus was discovered by– **Flemming**
- Chromatin is essentially composed of– **DNA and histones**
- The chromatids of a chromosome are held together at a point called– **Centromere**
- An elaborate network of filamentous proteinaceous structure present in the cytoplasm which helps in the maintenance of cell shape is called– **Cytoskeloeton**
- The chomosomes having centromere at terminal end are called– **Telocentric**
- The smallest cell is– **Mycoplasma (0.3 µm)**
- The genomic DNA of a bacterium is– **Circular**
- _____ component provides sticky character to the bacterial wall– **Glycocalyx**
- Cell theory was given by– **Schleiden and Schwann**
- Non-membrane bound cell organelles is found in both prokaryotes and eukaryotes– **Ribosomes**
- ..... the important site of formation of glycoproteins and glycolipids in eukaryotic cells– **Golgi bodies**
- The events does not occur in rough endoplasmic reticulum is– **Phospholipid synthesis**
- ..... does not differ in E.coli and Chlamydomonas– **Cell membrane**
- The fluid mosaic model of plasma membrane proposed by– **Singer and Nicolson**
- 'Omnis cellula-e cellula', i.e., new cells arise from pre-existing cells; this statement was given by– **Rudolf Virchow**
- Facilitate communication between adjoining cells by connecting the cytoplasm for rapid transfer of ions, small molecules and some large molecules- **The function of the gap junction**
- ..... cell is involved in making of the inner walls of large blood vessels– **Squamous epithelium**
- Largest isolated single cell is– **Ostrich egg**
- Cells having membrane bound nucleus are known as– **Eukaryotic cell**
- "Cell lineage theory" by stating that "Omnis cellula e cellula" proposed by– **Rudolf Virchou**
- Found a cytoplasm, chloroplasts, mitochondria and ER, organelle is– **Ribosome**
- The shape of the cell depends on their– **Function**
- Nucleus of the cell was discovered by– **Robert Brown**
- Cells which lack membrane bound nucleus are known as– **Prokaryotic cell**
- Theodor Schwann named the outer layer of the cell, is known as– **Plasma membrane**
- The simplest way to distinguish a prokaryotic from a eukaryotic cell is to check for– **a nucleus**
- The main area of cellular activities in plant and animal cells is– **Cytoplasm**
- Animal cells contain a non-membrane bound organelle which helps in cell division. This organelle is called– **Centrosome**
- The diameter of human red blood cell is about– **7.0 µm**

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- Cell theory states that– **All cells arise from pre-existing cells**
- An exception to cell theory is– **Virus**

8.2 Prokaryotic Cells

- The subunits of ribosomes of a prokaryotic cell are– **50S and 30S**
- The genetic material of a prokaryotic cell is known as– **Nucleoid**
- Structure is present only in prokaryotic cell– **Plasmid**
- Structures is not found in a prokaryotic cell– **Nuclear envelope**
- Ribosomes is not true for– **Have no role in protein synthesis**
- ..... are self replicating, extra chromosomal segments of double stranded circular and naked DNA, present in a bacterial cell– **Plasmids**
- Prokaryotic cells are generally ..... and multiply ..... than the eukaryotic cells– **Smaller, faster**
- Longest portion of bacterial flagella is– **Filament**
- Glycocalyx (mucilage sheath) of a bacterial cell may occur in the form of a loose sheath called ..... or it may be thick and tough called ..... **Slime layer, capsule**
- Correct sequence of layers of bacterial cell envelope from outward to inward is– **Glycocalyx → Cell wall → Cell membrane**
- X is a structure found in prokaryotes that is concerned with storage of reserve food materials like cyanophycean granules, X could be– **Inclusion body**
- The type of ribosomes found in prokaryotes is– **70S type**
- Take part in protein synthesis- **Prokaryotic ribosomes**
- Polyribosomes are aggregation of– **Several ribosomes held together by string of mRNA**
- Slime layer forms– **Glycocalyx**
- Cell wall of algae is made up of– **Mannans, $CaCO_3$, Galactans**
- Mesosomes of prokaryotes are functionally similar to– **Mitochondria**
- Gas vacuoles are found in– **Blue-green algae, Purple and green photosynthetic bacteria**
- Longest portion of bacterial flagella is– **Filament**
- In prokaryotes, it is concerned with storage of reserve food materials, e.g., cyanophycean granules, etc. It is a non-membrane bound and lie free in the cytoplasm. Identify it among the following– **Inclusion bodies**
- Structures is not found in a prokaryotic cell– **Nuclear membrane**
- The genetic material of prokaryotic cells is called– **Nucleoid**
- Structures is an organelle within an organelle– **Ribosome**
- ..... structures perform the function of mitochondria in bacteria– **Mesosomes**

8.3 Eukaryotic Cells

- Secretory cell is true for– **RER is easily observed in the cell**
- Membrane boundary of the vacuole of plant cells- **Tonoplast**
- Eukaryotic cell is not true for – **Cell wall is made up of peptidoglycans**
- Plastids differ from mitochondria on the basis of– **Presence of thylakoids**
- That stains is not used for staining chromosomes, is– **Safranin**
- Common features of prokaryotes and many eukaryotes is– **Cell wall present**
- A common characteristic feature of plant sieve tube cells and most of mammalian erythrocytes is– **Absence of nucleus**
- Plant cells differ from animal cells in having– **Cell wall, Plastids, A large central vacuole**
- The best material for the study of structure of cell membrane is– **RBC of human**
- That chemical property is shared by all types of lipids forming the plasma membrane– **Hydrophobic region**
- The head of phospholipid molecule is– **At the outer surface**
- Lipids are arranged within the membrane with the– **Polar head towards outer side and hydrophobic tails**
- Energy dependent process is– **Active transport**
- Integral cell membrane proteins– **are partially or completely embedded in lipid layers**
- The latest model of cell membrane is the– **Fluid mosaic model**
- According to the modern concept, cell membrane is– **Quasifluid**
- The fluid mosaic model explains ..... aspects of a cell membrane– **Both structural & functional**
- Cell membrane is selective permeable. This means that it– **Allows only certain materials to pass through**
- Many molecules can move briefly across the membrane without any requirement of energy and special membrane proteins. This is called– **Passive transport**
- The function of intracellular membrane is not to– **Keep the cell rigidity so that it does not collapse**
- Middle lamella is mainly composed of– **Calcium pectate**
- Dye injected into a plant cell might be able to enter an adjacent cell through– **Plasmodesmata**
- Cell wall of algae have– **Calcium carbonate**
- Continuity of cytoplasm from cell to cell is maintained through cytoplasmic connections in plants called– **Plasmodesmata**
- If you remove the cell wall from a plant cell and place the cell into a drop of water– **The cell would burst**
- That group of organelles is involved in synthesis of substances needed by cell– **Ribosome, RER, SER**

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- Organelle is not a part of the endomembrane system, that is – **Mitochondria**
- The cell organelle mainly involved in the synthesis and secretion of proteins is– **Rough endoplasmic reticulum**
- ..... is directly connected to the outer nuclear membrane– **ER**
- Mechanical support, enzyme circulation, protein synthesis and detoxification of drugs are the functions of– **ER**
- Smooth endoplasmic reticulum is well developed in the cells which synthesis– **Steroids**
- Packing of substances for export from the cell occurs in the– **Golgi bodies**
- ..... cell organelles are named after the name of its discoverer– **Golgi bodies**
- These are the densely stained reticular structures present near the nucleus, consisting of many flat, disc shaped cisternae of 0.5 - 1.0 µm diameter. These are– **Golgi apparatus**
- As they release hydrolase that digest old and damaged cells, the term suicide bags is aptly used by cell biologists for– **Lysosomes**
- Lysosomes are the reservoirs (storehouses) of **Hydrolytic enzymes**
- Cell organelle responsible for autolysis is– **Lysosome**
- Red colour of chilly is due to the presence of– **Chromoplast**
- Amyloplasts, elaioplasts and aleuroplasts belong to ..... category of plastids– **Leucoplasts**
- In chloroplasts, chlorophyll is present in the– **Thylakoids**
- Extranuclear inheritance is due to the presence of genes in– **Mitochondria and chloroplasts**
- ..... are granular structures first observed under electron microscope as dense particles by ..... (1953)– **Ribosomes, George Palade**
- Ribosomes are composed of– **RNA & proteins**
- Eukaryotic ribosome, chloroplast and mitochondrion are respectively– **80S, 70S and 70S**
- The core of a cilium or flagellum composed of microtubules and their associated proteins is called– **Axoneme**
- An organelle with an internal cross-section showing characteristic "9 + 2" array is the– **Cilium or flagellum**
- The usual axonemal arrangement of microtubules is– **9 pairs of doublets radially arranged at periphery with a pair of centrally located microtubules**
- Arrangement of microtubules in a flagellum and a centriole is respectively– **9 + 2 and 9 + 0**
- Centrosome is found in– **Cytoplasm**
- When the chromosome has a centromere slightly away from the middle of the chromosome resulting into one shorter and one long arm, the chromosome is termed as– **Sub-metacentric**
- The chromosome in which centromere lies close to its end resulting into one extremely shorter arm and one very longer arm, is called as– **Acrocentric**
- Provides mechanical support, motility and shape to the cell– **Cytoskeleton**
- Rough E.R. mainly responsible for– **Protein synthesis**
- Middle lamella function is– **Constituent to cell wall**
- In human, the correct percentage of constituent of RBC's membrane is– **Protein 52% + lipid 40%**
- Would happen if lysosomes get ruptured inside the cells, in which they are present– **Cells will die**
- Stores oils and fats is– **Elaioplast**
- Structures are responsible for lipid synthesis in animal cells– **Smooth ER**
- The structure of the cell membrane was studied in detail after the invention of the– **Electron microscope**
- Lysosome are optimum at– **Acidic pH**
- Cell organelle rich in hydrolases enzyme is– **Lysosomes**
- The name chromatin was given by Flemming after staining which type of dye– **Basic**
- Cellular organelles with single membrane are– **Lysosomes, Golgi apparatus and E.R**
- Fluidity of the cell membrane is a measure of the– **Ability to move within the membrane**
- Main component of the middle lamella– **Calcium pectate**
- Chromosome having centromere in its middle is– **Metacentric**
- Organelle important in spindle formation during nuclear division is– **Centriole**
- Hydrolytic enzymes are abundantly found in which cell organelles– **Lysosome**
- Three morphological forms of golgi complex are– **Cisternae, tubules and vesicles**
- Chlorophyll in chloroplasts is located in– **Grana**
- These organelles do not have coordinated functions with the others– **Peroxisomes**
- Nucleoplasm is made up of– **Nucleolus and chromatin**
- Important constituent of the nuclear matrix is– **Chromatin**
- The primary constriction for every visible chromosome is– **Centromere**
- The disc shaped structures located on the sides of the centromere are– **Kinetochores**
- Form of chromosome has two equal arms– **Metacentric chromosome**
- In 70S and 80S ribosomes, 'S' stands for– **Sedimentation coefficient and called Svedberg unit**
- Cilium and flagellum emerge from centriole-like structure called– **Basal body**
- Centrioles is made up of 9 evenly spaced peripheral fibrils. These are made up of ..... protein– **Tubulin**
- Centriole shape – **Cylindrical**
- The central proteinaceous part of proximal region of the centriole is called– **The hub**

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- Cell organelle that store carbohydrates is– **Amyloplast**
- Kinds of microtubules does the axoneme contain– **9 + 2**
- Foldings of inner mitochondrial membrane are called– **Cristae**
- Extensive and continuous with the outer membrane of the nucleus is– **Rough ER**
- Vacuole is covered by a membrane called– **Tonoplast**
- These organelles possess a single circular DNA molecule– **Mitochondria**
- Rounded structure inside nucleus and having rRNA- **Nucleolus**
- That structure of the chloroplast contains enzymes required for the synthesis of carbohydrates– **Stroma**
- Shape of chloroplast in higher green plants can be– **Discoid**
- Chromatin is chemically made of– **Nucleic acid, histone & non-histone proteins**
- Na^+/K^+ pump in a cell is an example of– **Active transport**
- The basal body of flagella forms is– **Centrioles**
- The space between the two membranes of the nuclear envelope is known as– **Perinuclear space**
- That property of membrane enables proteins to move laterally in membrane– **Fluidity**
- A common component of both algal and plant cell wall is– **Cellulose**
- Organelle is located near the nucleus and contains stack of flattened cisternae structures– **Golgi bodies**
- Type of chromosome has its centromere at its tip– **Telocentric chromosome**
- A few chromosomes have non-staining secondary constrictions at a constant location. these are constrictions is called– **Satellite**
- The cytoplasm of neighbouring cells are connected by– **Plasmodesmata**
- Membrane covering the vacuole is termed as– **Tonoplast**
- Endoplasmic reticulum often bears– **Ribosomes**
- The space inside the endoplasmic reticulum is called– **Luminal compartment**
- Elaioplasts store– **Oil and fats**
- Ribosomes attached in rough endoplasmic reticulum are– **On the surface**
- Carotene and xanthophylls are observed in– **Chromoplasts**
- Number of chloroplasts in green algae– **20 to 40 per cell**
- Stacks of membranous flattened discs in chloroplasts are termed as– **Grana**
- The site of production of lipid-like steroidal hormones in animal cells– **Smooth endoplasmic reticulum**
- The diameter of cisternae of Golgi bodies is– **0.5 μm to 1.0 μm**
- The shape of red blood cell is– **Round and biconcave**
- According to fluid mosaic model (proposed by Singer & Nicolson), plasma membrane is composed of– **phospholipid, extrinsic protein, intrinsic protein**
- In post translation modification of proteins and glycosidation of lipids these function - **The Golgi complex**
- An elaborate network of filamentous proteinaceous structures which helps in the maintenance of cell shape is called– **Cytoskeleton**
- Features are common in mitochondria and chloroplast– **ATP synthesis**

8.4 Miscellaneouse

- A common characteristic feature of plant sieve tube cells and most of mammalian erythrocytes is– **Absence of nucleus**
- These is not a eukaryote– **Anabaena**
- Stain is not used for staining chromosomes– **Safranin**
- Features is common to Prokaryotes and many eukaryotes – **Cell wall present**
- Membrane boundary of the vacuole of plant cells- **Tonoplast**
- About eukaryotic cell, not true of– **Cell wall is made up of peptidoglycans**
- Plastid differs from mitochondria on the basis of one of the following features is– **Presence of thylakoids**
- When the centromere is situated in the middle of two equal arms of chromosomes, the chromosome is referred as– **Metacentric**
- The organelles that are included in the endomembrane system are– **Endoplasmic reticulum, Golgi complex, Lysosomes and Vacuoles**
- That important site of formation of glycoproteins and glycolipids in eukaryotic cells– **Golgi bodies**
- The biosynthesis of ribosomal RNA occurs in– **Nucleolus**
- Inclusion bodies of blue-green, purple and green photosynthetic bacteria are– **Gas vacuoles**
- The size of Pleuropneumonia - like Organism (PPLO) is– **0.1 μm**
- The shorter and longer arms of a submetacentric chromosome are referred to as– **p-arm and q-arm respectively**
- That pair of organelles does not contain DNA– **Lysosomes and Vacuoles**
- The concept of "Omnis cellulo-e cellulo" regarding cell division was first proposed by– **Rudolf Virchow**
- It is a site for active ribosomal RNA synthesis- **True for nucleolus**
- The Golgi complex participates in– **Formation of secretory vesicles**
- That events does not occur in rough endoplasmic reticulum– **Phospholipid synthesis**
- Many ribosomes may associate with a single mRNA to form multiple copies of a polypeptide simultaneously. Such strings of ribosomes are termed as– **Polysome**

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EXAM POINT

Cell : The Unit of Life	
The term protoplasm for the cell contents was coined by– **J.E. Purkinje**	**J&K CET-2005 JCECE-2005 Punjab MET-2004 CG PMT-2005, 2004**
Programmed cell death is scientifically termed as– **Apoptosis**	**BCECE-2014, 2011 VMMC-2012, UP CPMT-2008 Rajasthan PMT-2008 BHU PMT (Screening)-2006**
It is a part of symplastic system– **Plasmodesmata**	**AP EAPCET-23.05.2023, Shift-I**
Structural elements of cells– **Nitrogen, Hydrogen, Oxygen and Carbon**	**AP EAPCET-23.05.2023, Shift-I**
The following cell organelles are considered as endomembrane system– **Endoplasmic reticulum–Golgi complex–Lysosomes**	**AP EAPCET-23.05.2023, Shift-I**
The first cell of human life is– **Synkaryon**	**MHT CET-07.10.2020 Shift-I**
Generally the smaller cell– **It will be more metabolically active**	**Tripura JEE-2017 CMC Ludhiana-2011**
80% of the cell has– **Water**	**AFMC-2000**
The unit used for the measurement of size of cell is– **μm**	**Manipal-2011**
Chemical composition of protoplasm contains– **O, C, H and N**	**BVP - 2008 Rajasthan PMT-1998**
Pure fractions of cellular component can be isolated by– **Differential centrifugation**	**Kerala CET-2005 Manipal-2013**
Dutrochet has given the concept about cell in– **1824**	**JIPMER-2013**
The theory that all the cells arise from pre-existing cells (Omnis cellula e cellula) was proposed by– **Rudolf Virchow (1855)**	**CG PMT-2010 AMU-2015**
The main arena of various types of activities of a cell is– **Cytoplasm**	**AIPMT (Screening)-2010**
The type of cell junction which facilitates cell to cell communication is– **Gap junction**	**Kerala PMT-2008**
The cytoplasm of neighbouring cells is connected with the help of– **Plasmodesmata**	**Kerala PMT-2012 Punjab MET-2006**
By weight the most abundant element in a cell is– **Oxygen**	**AMU-1995**
A major breakthrough in the studies of cells came with the development of electron microscope. This is because– **The resolution power of the electron microscope is much higher than that of the light microscope**	**AIPMT-2006**
Living cell contains 60 - 75% water. Water present in human body is– **65 - 70%**	**AIPMT-1992**
Acetabularia used in Hammerling's nucleocytoplasmic experiments is– **Unicellular uninucleate green algae**	**AIPMT-1989**
Nucleoproteins are synthesized in– **Cytoplasm**	**AIPMT-1989**
Hammerling's experiments on Acetabularia involved exchanging– **Rhizoid and stalk**	**AIPMT-1990**
According to modern colloidal theory, the protoplasm is a polyphasic colloidal system. This was first suggested by– **R.A. Fisher**	**JCECE-2002**
Solution of polyethylene glycol (PEG) or a very brief high voltage electric current is used in fusion of– **Protoplasts**	**Punjab MET-2007**
The branch of Biology dealing with structure, function and reproduction of cell is– **Cell biology**	**J&K CET-2005**
A cell is kept in a solution for sometimes, when it bursts. The solution should be– **hypotonic**	**Manipal-2001**
Auxetic growth is increase in– **Cell volume**	**BVP-2014**
The protoplasm is– **Colloidal**	**JCECE-2014, CG PMT-2004**
The physical basis of life is– **Protoplasm**	**CG PMT-2004**
Cork cells are dead because they do not possess– **Protoplast**	**CMC Vellore-2011**

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Cell theory	
Cell theory was formulated by– **Schleiden and Schwann**	**Karnataka CET-2022 JIPMER-2008,2006 CGPMT-2006,2005 BVP-2002, AMU-2001 Rajasthan PMT-2000 Haryana PMT-1999**
The statement omnis cellula e cellula of Rudolf Virchow has been taken from his book– **Cellular pathology**	**NEET-2019 Manipal-2006, 2014 JIPMER-2011 Rajasthan PMT - 2011 AMU – 2015 / AIIMS-2007**
Robert Hooke used the term cell in the year– **1665**	**MANIPAL-2008 Uttarakhand PMT-2008 BHU-PMT (Screening)-2008 BVP-2007 / BHU PMT-2004**
The cell as a basic unit of structure of living things was discovered by– **Robert Hooke**	**J&K CET-2005, 2001 DUMET-2005 UP CPMT-2003**
Hypertrophy of RBC and splenomegaly are the symptoms of– **Malaria**	**AP EAPCET-22.05.2023, Shift-I**
Schleiden (1838) proposed that cell is the structural and functional unit of life. His idea was a– **Hypothesis**	**UP CPMT-2004**
The cell theory is not applicable to– **Viruses**	**Manipal-2011**
The replication of DNA is a pre-requisite for a eukaryotic cell to undergo division. During the cell cycle the DNA replicates in– **S phase**	**AFMC-2007**
All tissues consist of cells sentence was said by– **Schleiden**	**JIPMER-2003**
The study related to the structure and function of a cell is called as– **Cytology**	**JCECE - 2005 Punjab MET -2004 Manipal-2000,2002**
Nucleated RBC is present in– **Frog**	**Haryana PMT-2005**
The smallest free living organism is– **Mycoplasma**	**CG PMT-2009 Haryana PMT-2009**
Organisms without any specific shape are– **Mycoplasma**	**CG PMT-2006**
Robert Hooke thought of the cells, he observed that– **something similar to veins and arteries of animals for conducting fluid**	**Manipal-2006**
Mycoplasmas differs from other bacteria in their– **Cell wall**	**CG PMT-2010**
The longest cells in the body of man is– **Nerve cells**	**BVP-2012**
The 'Cell theory" states that– **cells are the fundamental structural matter of plants and animals**	**CG PMT-2004**
Witches broom disease is caused by– **Phytoplasma**	**Punjab MET-2004**
Outline of cell	
The genotype of a carrier individual who shows sickle cell anaemic trait is– **Hb^A Hb^S**	**MHT CET-04.10.2020 Shift-I**
Chemical nature of cellulose is– **Polysaccharide**	**J&K CET-2004**
In fluid mosaic model of plasma membrane– **Phospholipids form a bimolecular layer in middle part**	**AIPMT-2002**
The microscope usually used for seeing living cells or tissues is– **Phase contrast microscope**	**AIIMS-2012 BVP-2012**
T. Schwann and M Schleiden were– **German and british biologists respectively**	**Haryana PMT-2000, 2004 UP CPMT-2001**
Types of cell	
Centriole is found in– **Animal cell**	**VMMC-2011**
Difference between prokaryote and eukaryote is– **Organization of nuclear material**	**Rajasthan PMT-2004**
Animal cell differ from plant cell in possessing– **Centrosomes**	**JIPMER-2013 Haryana PMT-1999**
The largest body cell is– **Neurons**	**Haryana PMT-2003**

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The organelles which play an important role in the formation of cell plate are– **Golgi complexes**	**AP EAMCET-2000**
Alginic acid is found in the cell wall of– **Laminaria**	**CMC Vellore-2009**
Cell wall of a cell is removed, the remaining is called– **Protoplast**	**BCECE-2004**
The thickness of unit membrane is– **75Å**	**BCECE-2014** **BHU PMT (Screening)-2009** **Uttarakhand PMT-2009** **VMMC-2009** **BVP-2009**
Prokaryotic cell	
Nucleoid is– **Prokaryotic chromosome associated with proteins**	**MHT CET-07.10.2020 Shift-I**
During mitosis, nuclear membrane disappears at– **Late prophase**	**Tripura JEE-2017**
The type of ribosome found in prokaryotic cell is– **70 S**	**Tripura JEE-2017** **Karnataka CET- 2011**
The bacterium that appears violet after Gram staining– **Mycobacterium tuberculosis**	**WB JEE-2012**
Pili in bacteria represent– **Protoplasmic outgrowth of donor cell**	**BHU PMT-2001**
In many bacteria, the cell membrane becomes invaginated and respiratory enzyme found in **Mesosomes**	**Haryana PMT – 2003** **Uttarakhand PMT-2004** **AMU -2005** **DUMET-2007** **Manipal - 2004, 2005**
A prokaryotic cell lacks– **True nucleus, Nuclear membrane and Membrane bound organelles**	**MGIMS Wardha-2010** **WB JEE-2006** **AFMC-2003**
The outer face of the outer membrane of Gram negative bacteria contains– **Lipopolysaccharides**	**BCECE-2009**
70S ribosomes have two units. These are– **50S + 30S**	**BCECE-2009** **J&K CET-2008**
Respiratory mesosomes are also known as– **Mitochondria of bacteria, Chondroids and Store house of respiratory enzyme**	**Haryana PMT-2011**
Genetic material of prokaryotic cell– **Non histone double stranded DNA**	**AIPMT-1999**
Exponential growth is shown by– **A cell in tissue culture**	**AIPMT-1999**
Prokaryotic cells occur in– **Bacteria, PPLO and cyanobacteria**	**J&K CET-2002**
Broad spectrum antibiotics are those which– **Acts on a variety of pathogenic**	**Uttarakhand PMT-2006**
Scientific name of green gram is– **Vigna radiata**	**JCECE-2010**
Internal membrane systems that may become extensive and complex in photosynthetic bacteria– **Chromatophores**	**AIIMS-2006** **JIPMER-2011**
The outermost limiting layer of mycoplasma is made up of– **Cell membrane**	**AIIMS-2009**
The cells of the bacterium Streptococcus remain arranged in the form of– **Chain**	**CG PMT-2005**
The genetic material of prokaryotic cells is called– **Nucleoide**	**CG PMT-2005**
Mesosome in a bacterial cell is– **Plasma membrane infolded for respiration**	**Manipal-2005**
In prokaryotes the Glycocalyx when it is thick is called– **Capsule**	**Karnataka CET-2015**
Following is not present in prokaryotic cell– **Mitochondria, Smooth ER and Golgi body**	**Rajasthan PMT-1995**
In the animal body blood bank is– **Spleen**	**JCECE-2004**
Mitochondria is always absent in– **Prokaryotic cells**	**WB JEE-2014**
Shorter generation time of E. coli compared to eukaryotes may be explained on the basis of– **Large surface area to volume ratio**	**WB JEE-2008**
Plasmid is– **Small extra chromosomal DNA**	**BVP-2012** **Haryana PMT-2006, 2004, 2003** **Manipal-2003**
In protoplasm fat store in the form of– **Triglyceride**	**Rajasthan PMT-2004**
Microfilaments in eukaryotic cells are made up of– **Actin**	**DUMET-2010**
Muramic acid is present in the cell wall of– **Bacteria**	**CG PMT-2007**

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Bacterial flagella is made up of– **Protein**	**AFMC-2004**
The most studied prokaryote is– **Escherichia coli**	**CG PMT-2010**
Merozygote is formed in– **Escherichia coli**	**CG PMT-2010**
Bacterium have flagella with all over body is known as– **Peritrichous**	**VMMC-2004**
Eukaryotic cell	
The extra food is stored in this form in eukaryotic, multicellular heterotrophs– **Glycogen**	**TS EAMCET-11.05.2023, Shift-II**
Glyoxysomes is only found in– **Plant**	**JIPMER-2019**
Catabolism of long chain fatty acids occurs in– **Peroxisomes**	**TS EAMCET-12.05.2017**
Barophilic prokaryotes– **Grow and multiply in very deep marine sediments**	**CG PMT-2006**
The telomeres of eukaryotic chromosomes consists of short sequences of– **Guanine rich repeats**	**Manipal-2007**
The chief component of the middle lamella in plant cell is– **Calcium**	**DUMET-2009 VMMC-2011 J&K CET-2004**
Extranuclear DNA (genes) are located in– **Chloroplast and mitochondria**	**Haryana PMT-2010**
Genophore term was coined by Hans Ris for– **Bacterial chromosome**	**Haryana PMT-2008**
In eukaryotic cells, the amount of basic proteins is often found to be– **More than the amount of DNA**	**BHU PMT (Screening)-2011 AMU-2011, 1996**
The secretion of macromolecules by fusing a transport vesicle to the plasma membrane is– **Exocytosis**	**Haryana PMT-2011**
In germinating seeds fatty acids are degraded exclusively in the– **Glyoxysomes**	**AIPMT-2008**
Some of the enzymes which are associated in converting fats into carbohydrates are present in– **Glyoxysomes**	**AP EAMCET-1997**
Animal cell differs from plant cells in not having the– **Cell wall, plastids and glyoxysomes**	**J&K CET-2002**
The reactions of pentose phosphate pathway (PPP) takes place in– **Cytoplasm**	**Kerala PMT-2009**
Double membrane structure of cell are– **Nucleus, chloroplast and mitochondria**	**AIIMS-2000**
A protoplast is a cell– **Without cell wall**	**AIPMT (Re-Exam)-2015**
A human RBC is placed in 1.5% salt solution. It will– **Shrink**	**AIIMS-2001**
In plant cells peroxisomes are associated with– **Photorespiration**	**AIPMT-1993**
A eukaryotic cell has– **Definite nucleus**	**CG PMT-2005**
A mature plant cell has– **Vacuole, cell wall and protoplasm**	**CG PMT-2005**
The cell organelles are found in– **Eukaryotic cells**	**WB JEE-2007**
Tonofibrils of desmosomes are made up of– **Keratin and desmin**	**BVP-2006**
The desmosomes are concerned with– **Cell adherence**	**Haryana PMT-2000**
Cell Organelles to Understand its Structure and Functions	
Lysosome contain– **Hydrolytic enzymes**	**MGIMS Wardha-2012 AIPMT-2000 Haryana PMT-2000 AFMC-2007**
The smooth and rough endoplasmic reticulum are involved in the synthesis of– **Lipids and proteins respectively**	**AP EAPCET-23.05.2023, Shift-II**
Cilium and Flagellum emerge from centriole like structures called– **Basal bodies**	**AP EAMCET-24.09.2020 Shift-I**
The Golgi complex participates in– **Formation of secretory vesicles**	**NEET-2018**
The organelles which occurs external to cell membrane but internal to cell wall are– **Lomasomes**	**VMMC-2006**
The term protoplasm was coined by– **Purkinje**	**Manipal-2000**
A major site for synthesis of lipids is– **SER**	**NEET-2013**
Mitochondria and chloroplasts are similar because– **Both have DNA**	**MGIMS Wardha-2013**
An antiviral substance known to prevent the synthesis of new virus in the cell is known as– **Interferon**	**AMU-1996, HP CET-2012 Punjab MET-2006**
The membrane less cell organelle is– **Ribosome**	**Rajasthan PMT-2000**

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Cell organelles are present in– **Cytoplasm**	Rajasthan PMT-2000
Most of the hydrolytic enzymes of lysosomes function at– **Acidic pH**	CMC Ludhiana-2011 CG PMT-2009
Interferons are– **Anti-viral protein**	Karnataka CET-2007
The protein products of tumour suppressor gene may– **Be present in non-cancerous cells**	JIPMER-2015
Enveloped virus enters into host cells by– **Injection own nucleic acid inside host cells**	UP CPMT-2006
The Golgi complex plays a major role– **In post translational modification of proteins and glycosidation of lipids**	NEET-2013
The plastids which store oil are– **Elaioplasts**	UP CPMT-2013
The cancer of the epithelial cells is called– **Carcinoma**	Kerala PMT-2008
Continued exposure of vinyl chloride may cause cancer of the– **Liver**	CMC Vellore-2013
The structures that are formed by stacking of organized flattened membranous sacs in the chloroplasts are– **Grana**	AIPMT-2015
Cellular organelles with membranes are– **Lysosomes, Golgi apparatus and mitochondria**	AIPMT (Re-Exam)-2015
Chlorenchyma found in– **Spore capsule of a moss**	AIPMT-2003
If a biochemical analysis of mitochondria has to done, the best procedure would be–**Subject the cell to cell fractionation (centrifuge) and obtain mitochondria**	AIIMS-2015
The plant cell differs from the animal cell in– **The presence of large vacuole**	Karnataka CET-2001
These type of vacuoles contain hydrolases– **Food**	BCECE-2015
The non-membranous organelles are– **Ribosomes, centrioles and nucleolus**	AP EAMCET 23.05.2023 Shift-II DUMET-2004
The pH of protoplasm is– **6.8**	Rajasthan PMT-1999
Tonoplast is membrane that surrounded organelles are– **Vacuoles**	Manipal-2005
Role of carbohydrate in protoplasm– **For energy**	MGIMS Wardha-2012 Rajasthan PMT-1999
Zone of exclusion surrounds– **Golgi apparatus**	J&K CET-2011
Sperm acrosome is derived from– **Golgi bodies**	J&K CET-2011
Engulfing of solid materials by cells is called– **Phagocytosis**	WB JEE-2015 Karnataka CET-2000
Cell Membrane and Cell Wall	
Fluid mosaic model for cell membrane was proposed by– **Singer and Nicolson**	Tripura JEE-2019, 2018 VMMC-2011,2005 CMC Vellore-2010 AMU-2009, 2004,1999 BCECE-2006,2007 Rajasthan PMT-2006, 2003 DUMET-2006, JCECE-2005 Manipal-2000 HP CET - 2011
The main components of plasma membrane are– **lipids, proteins and carbohydrates**	BVP-2008 Uttarakhand PMT-2007 MGIMS Wardha-2005 Rajasthan PMT-2003 UP CPMT-2005
In gram positive bacteria cell wall is made up of– **murein**	HP CET-2013 Rajasthan PMT-2003 Punjab MET-1999 Haryana PMT-2001 Karnataka CET-2001
Carrier proteins are involved in– **active and passive transport of ions**	BVP-2014, 2003 BCECE-2006 VMMC-2005 / AMU-2004
Fluid mosaic model exhibits amphipathy because of– **phospholipids**	AMU-2011 MGIMS Wardha-2011 BHU PMT (Screening)-2011

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The movement of water through the cell wall is known as– **Apoplast**	AP EAPCET-12.07.2022 Shift-I
Polyribosomes are formed when ribosomes are attached by– **m-RNA**	MHT CET-07.10.2020 Shift-I
A membrane that allows the passage of solvent molecules but not the passage of solute molecules is called– **semi-permeable membrane**	MHT CET-07.10.2020 Shift-I
Plasma membrane is– **Selectively permeable, elastic and asymmetric**	SRM JEEE-2019
The role of sterol in cell membrane is– **Stability**	JIPMER-2018
Energy is used in– **Active absorption**	Tripura JEE-2017
Plant cell wall is made up of– **Cellulose, hemicelluloses and pectin**	SRM JEEE -2017
Lipids are insoluble in water, because lipid molecules are– **Hydrophobic**	WB JEE-2006
Nuclear membrane is continuous with– **Rough endoplasmic reticulum**	Punjab MET-2009
Teichoic acid is present in– **Cell wall of Gram positive bacteria**	Punjab MET-2009
Cell wall of fungi is made up of– **Fungal cellulose and fungal chitin**	AMU - 2009 Punjab MET-2009
N–acetyl muramic acid is found in– **Cell wall component of Gram positive bacteria**	WB JEE-2012
Lipid bilayer is present in– **Plasma membrane**	Punjab MET-2006 Rajasthan PMT-2004
In middle lamella, substance present in large quantity is– **Pectins**	Rajasthan PMT-1996
In 1994 Nobel prize for the discovery of protein in cell membrane was awarded to– **Gilman and Rodbell**	Rajasthan PMT-1996
The term plasmalemma is given by– **J. Q. Plower**	UP CPMT-2010
Liquid food drinking is called as– **pinocytosis**	BVP-2008 Uttarakhand PMT-2007
Simultaneous movement of two molecules across a membrane in the same direction is known as– **Symport**	DUMET-2010
Cellulose is the major component of cell walls of– **Pythium**	BHU PMT (Screening)-2010
A cell will experience the highest level of endosmosis when it is kept in– **Distilled water**	KVPY SA-2012
Na^+/K^+ pump in a cell is an example of– **Active transport**	AMU-2010
In many bacteria, the cell membrane becomes invaginated and folded to form– **Mesosomes**	AMU-2005
The membrane which allows passage of certain substances more readily than others is termed as– **Selectively permeable**	VMMC-2005 AMU-2004
Diatomaceous earth is obtained from– **Bacillariophyceae**	JIPMER-2013
The secretion of macromolecules by fusing a transport vesicle to the plasma membrane is– **Exocytosis**	BHU PMT (Screening)-2011
The cell engulfs and internalized materials using its membrane these process is known as - **Endocytosis**	Manipal-2009
Making transient pores in cell membrane to facilitate entry of gene constructs, these process involves in - **Electroporation**	DUMET-2009
An enzyme carrier protein associated with cell membrane– **Permease**	VMMC-2008, AMU-2008
Pits are formed on the cell wall is due to lack of– **Secondary wall material**	J&K CET-2007
Lipid molecules in plasma membrane are arranged in– **Head parallel manner**	VMMC-2007
In Singer and Nicolson model of plasma membrane, the extrinsic proteins are– **loosely associated with intrinsic protein and can be easily separated**	BCECE-2002
Cell Adhesion and cell recognition occur due to biochemicals of cell membrane named– **Glycoproteins and glycolipids**	AMU-2003 AIPMT-1993
The plasma membrane consists mainly of– **Proteins embedded in a phospholipid bilayer**	AIPMT (Screening)-2010
Middle lamella is composed mainly of– **Calcium pectate**	AIPMT-2009,2001 AP EAMCET-25.09.2020 Shift-II Haryana PMT-2006
Cell wall consists of– **Lignin, hemi cellulose, pectin and cellulose**	Karnataka CET-2007
The right sequence of carriers, which involve in the transport of excess Na^+ ions out of the cell in salt resistant plants, is– **Uniporter, Antiporter**	AP EAMCET-2010

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Cell membrane controls– **Exocytosis and endocytosis**	**UP CPMT-2006 JCECE-2008**
Ultraphagocytosis (colloidopexy) is intake by cell of– **Small colloidal particles**	**VMMC-2008**
In fluid mosaic model of plasma membrane– **Phospholipids form a bimolecular layer in middle part**	**AIPMT-2002**
The Singer model of plasma membrane differs from Robertson's model in the– **Arrangement of proteins**	**AIIMS-1998**
Cell membrane in animals is composed mainly of the molecule of– **Lipids and proteins**	**JIPMER-2006**
The property of semi permeability belongs to– **Plasma membrane**	**AIIMS-2011**
Singer and Nicolson known for– **Fluid-mosaic model of plasma membrane**	**AIIMS-2010 BVP-2003 Punjab MET-2008**
According to fluid mosaic model, plasma membrane is composed of– **Phospholipids, extrinsic proteins and intrinsic proteins**	**J&K CET - 2011 AIPMT-1989**
Addition of new cell wall particles amongst the existing ones is– **Intussusception**	**AIPMT-1991**
The desmosomes are concerned with– **Cell adherence**	**AIPMT-1995 VMMC-2002**
Desmosome is the modification of– **Plasma membrane**	**CG PMT-2005**
Structural lipids of cell membrane are– **Phospholipids**	**WB JEE-2011**
Cystoliths are composed of– **Calcium carbonate**	**DUMET-2003**
The most abundant substance of middle lemella is– **Pectin**	**MP PMT-2013**
Each phospholipid molecule in a cell membrane consists of– **One polar head and two non-polar tail**	**J&K CET-2003**
The primary cell wall is mainly made up of– **Cellulose**	**WB JEE-2014**
Glycocalyx is associated with– **Plasma membrane**	**J&K CET-2011**
The structural element of cell wall is– **Microfibrils**	**WB JEE-2008**
Endomembrane System	
The cell organelle covered by single unit membrane is– **Lysosome**	**TS EAMCET-30.07.2022 Shift-II NEET-2016 Phase-I MGIMS Wardha-2005 VMMC-2005 UP CPMT-2005 AMU-2004 AP EAMCET-2001 Punjab MET-1999 Rajasthan PMT-1998, 1996,1995**
Tonoplast is a membrane, which surrounds– **Vacuole**	**UP CPMT-2012 DUMET-2009 Kerala PMT-2009 JIPMER-2009 CG PMT-2008 BHU PMT (Screening)-2009, 2006 Uttarakhand PMT-2009, 2005 BVP-2014, 2009, 2000 AMU-2009, 2001, 1998 Punjab MET-2009 CMC Vellore-2009 AP EAMCET-1997 Rajasthan PMT-2004, 2009, 1996**
Synthesis of lipids and carbohydrates is regulated by– **SER**	**AIIMS-25.05.2019 Shift-I AIIMS-27.05.2018 Shift-I AIIMS-26.05.2018 Shift-II Rajasthan PMT-2006, 2001 CG PMT-2005 J&K CET-2003 JCECE-2003**

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Cell respiration is carried out by– **Mitochondria**	**CMC Vellore-2010** **AMU – 2009** **WB JEE-2009** **Punjab MET - 2008** **VMMC-2007** **Rajasthan PMT–2005, 2003, 1995** **Punjab MET - 2004** **UP CPMT-2002** **Manipal-2000**
The protein synthesis is takes place in – **Ribosome**	**JCECE-2006** **Haryana PMT-2004,2006** **Punjab MET-2010** **Uttarakhand PMT-2008** **Manipal – 2003,2008** **DUMET-2001, 2003,2008** **BVP -2005, 2007, 2001** **UP CPMT-2007** **Rajasthan PMT- 1998,1999, 2006** **CGPMT - 2006** **BHU PMT-2004** **AIPMT-1992**
Rough endoplasmic reticulum differs from smooth walled endoplasmic reticulum due to the presence of– **Ribosome**	**DUMET-2011** **UP CPMT-2011** **Uttarakhand-2005** **Punjab MET-1999**
Acrosome is formed by– **Golgi body**	**CG PMT - 2011** **Rajasthan PMT-2004** **J&K CET-2003** **VMMC-2002**
Golgi body is responsible for the origin of– **Lysosome**	**BVP-2009 / VMMC-2009** **Uttarakhand PMT-2009** **BHU-PMT (Screening)-2009**
The main function of lysosomes is in– **Extracellular digestion and intracellular digestion**	**AMU - 2005** **CG PMT-2005** **Manipal-2004** **Uttarakhand PMT-2004**
Golgi body originates from– **Endoplasmic reticulum**	**Karnataka CET-2018** **VMMC-2007** **Rajasthan PMT - 2005, 1998** **AFMC-2003**
The organelles that are included in the endomembrane system are– **Endoplasmic reticulum, Golgi complex, Lysosomes and Vacuoles**	**NEET-2021**
The name endomembrane system to the membranous organelles because– **Their functions are coordinated**	**AP EAMCET-05.10.2021 Shift-I**
Phospholipids with phosphorylated organic compound in plasma membrane is– **Lecithin**	**AP EAMCET-25.09.2020 Shift-II**
The fluidity of membranes in a plant in cold weather may be maintained by– **Increasing the number of phospholipids with unsaturated hydrocarbon tails**	**AP EAMCET-25.09.2020 Shift-II**
All the digestive enzymes like carbohydrase, protease, lipase, DNase, RNase are found in– **Lysosome**	**AIIMS-27.05.2018 Shift-II**
Vesicles of Smooth Endoplasmic Reticulum (SER) are most likely on their way to– **Golgi apparatus**	**WB JEE-2006**
Golgi complex works for– **secretion**	**Rajasthan PMT-2004**
Golgi complex is specialised for– **glycosidation of lipids**	**BVP-2010**
Enzymes for autolysis are found in– **lysosome**	**Rajasthan PMT-1996**
The area where brown fats are maximum in infant neck will have more– **Mitochondria**	**Rajasthan PMT-1996**
Endoplasmic reticulum was discovered by– **K.R. Porter and Thompson**	**UP CPMT-2010**
Lysosomes are formed by– **Golgi membrane**	**BVP-2008** **Uttarakhand PMT-2007**
Dictyosomes are also known as– **Golgi bodies**	**BHU PMT-2001**
Long flattened usually unbranched units arranged in parallel stacks in endoplasmic reticulum are called– **cisternae**	**J&K CET-2009** **Rajasthan PMT-1998**

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Axoneme is a structure associated with– **cilia and flagella**	**J&K CET-2014**
Cisternae have a diameter of– **0.5 µm to 1.0 µm**	**J&K CET-2014**
Perinuclear space is present in– **ER(Endoplasmic Reticulum)**	**J&K CET-2014**
Rough endoplasmic reticulum is actively involved in– **protein synthesis**	**J&K CET-2014**
Lysosome along with the food content is called– **secondary lysosome**	**JIPMER-1997**
Lysozyme that is present in perspiration, saliva and tears, destroys– **certain types of bacteria**	**JCECE - 2012** **Rajasthan PMT-2010**
Protein packaging is done in– **Golgi apparatus**	**AMU-2011** **DUMET - 2002**
Lysosomes were discovered by de Duve accidentally. The term lysosomes and examined under electron microscope is given by– **Novikoff**	**VMMC-2006**
When a lysosome fuses with a phagosome, it results in the formation of– **Secondary lysosomes**	**Karnataka CET-2003**
Hurlers disease is caused by the absence of– **lysosomes**	**Uttarakhand-2005** **BVP - 2000**
Constituents of plasma membrane are– **Protein-lipid-protein**	**CG PMT-2006**
Acid phosphatase is present in abundance in– **Lysosomes**	**Manipal-2006**
The chemical substances found most abundantly in the middle lamella are released into the phragmoplast by– **golgi complex**	**Manipal-2009**
Cells which are secretory in function have abundant– **dictyosomes**	**DUMET-2001, 2002** **Haryana PMT-2008**
Protoplast lacks– **cell wall**	**AP EAMCET-2002**
Protein synthesis takes place in– **ribosomes**	**BHU-PMT (Screening)-2008** **AIIMS-2000**
The organelles, which take part in photo respiration are– **Mitochondria, chloroplast, peroxisome**	**CMC Ludhiana-2008**
An interconnecting membranous network of the cell composed of vesicles flattened sacs and tubules is– **Endoplasmic reticulum**	**Karnataka CET-2012**
Vacuole in a plant cell– **is membrane-bound and contains water and excretory substances**	**AIPMT-2008**
Important site for formation of glycoproteins and glycolipids is–**Golgi apparatus**	**AIPMT (Screening)-2011**
Peptide synthesis inside a cell takes place in– **Ribosomes**	**AIPMT (Screening)-2011**
Golgi body originates from– **Endoplasmic reticulum**	**UPCPMT-2002**
The endoskeleton of cell is made up of– **Endoplasmic reticulum**	**BVP-2004**
In plants, vacuole contains– **water and dissolved substance**	**Haryana PMT-2004** **Manipal-2003** **BVP-2005**
The cell organelle associated with intracellular digestion of macromolecules is– **Lysosome**	**Kerala PMT-2009**
Endoplasmic reticulum is in continuation with– **nuclear wall**	**JIPMER-2010** **BHU PMT (Screening)-2005**
Nuclear envelope is a derivative of– **Rough endoplasmic reticulum**	**AIPMT-2015**
The osmotic expansion of a cell kept in water is chiefly regulated by– **Vacuoles**	**AIPMT-2014**
The main organelle involved in modification and routing of newly synthesized proteins to their destinations is– **Endoplasmic Reticulum**	**JIPMER-2007** **AIPMT-2005**
Ribosomes are produced in– **Nucleolus**	**AIPMT-2002**
Besides giving out secretory vesicles, the Golgi apparatus is also concerned with the formation of– **Lysosomes**	**AIPMT-1994**
Golgi apparatus is found in– **Eukaryotic cell**	**J&K CET-2000**
Mechanical support, enzyme circulation, protein synthesis and detoxification of drugs are function of– **ER**	**JCECE-2007**
Enzymes found attached to inner membrane of mitochondria instead of matrix are– **Succinic dehydrogenase and cytochrome oxidase**	**JCECE-2007**
The surface of the Endoplasmic Reticulum (ER) is covered with– **Ribosome**	**J&K CET-2005**
Endoplasmic reticulum is studded with– **Ribosomes**	**DUMET-2002**

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Modifies and packages proteins - **Golgi apparatus**	**DUMET-2011**
Cell organelle responsible for autolysis– **lysosome**	**DUMET-2003**
The principal function of Golgi apparatus is– **packaging materials**	**AMU-2014**
The secreatory organ of the cell - **Golgi Apparatus**	**Rajasthan PMT-1999**
Suicidal bags are– **lysosomes**	**Rajasthan PMT-2006, 2003**
Action of lysozyme is– **physiological**	**DUMET-2007**
..... is absent in Bacteria and blue-green algae – **Golgi apparatus**	**BHU PMT (Mains)-2007 CGPMT - 2004 AIPMT – 1993 BCECE-2014 BHU-PMT (Screening)-2008**
Endoplasmic reticulum is more developed in– **young cells**	**CG PMT-2004**
Fluid mosaic model was given by– **Singer and Nicolson**	**Punjab MET-2004**
Two membrane envelops is found in– **mitochondria, nucleus and chloroplast**	**WB JEE-2015**
Structure of nuclear membrane helps in– **nucleo-cytoplasmic exchange of material**	**Rajasthan PMT-2005**
Mitochondria	
Extranuclear chromosomes are found in– **chloroplast and mitochondria**	**KVPY SA-2014 Manipal-2013 Haryana PMT-2004 Rajasthan PMT-1996, 1995, 2001 AIPMT-2000, 2001**
Oxysomes or F_0–F_1 particles occur on– **Inner mitochondrial membrane**	**CMC Vellore-2010 AMU-2009 Punjab MET - 2008 AIPMT-1992**
In mitochondria, enzyme cytochrome oxidase is present in– **inner membrane**	**BVP – 2014 VMMC – 2009,2011 BHU PMT(screening) -2009 Uttarakhand PMT-2009**
The term mitochondria is coined by– **C. Benda**	**JCECE-2005 Manipal-2000 Rajasthan PMT-1996 Punjab MET-2004**
Cristae are associated with– **Mitochondria**	**BCECE-2015 JCECE-2008 UP CPMT-2007**
Energy currency (reservoir) of the cells is– **ATP**	**UP CPMT-2012 BVP-2012 MGIMS Wardha-2006**
Mitochondria without outer membrane is– **Mitoplast**	**WB JEE-2010 CMC Vellore-2007 VMMC-2006**
Inner mitochondrial membrane is differentiated from outer mitochondrial membrane in presence of– **Cristae**	**AP EAMCET-05.10.2021 Shift-I**
Chondriosome was discovered by– **Benda**	**AP EAMCET-24.09.2020 Shift-I**
Protein molecules that form huge pores in the membranes of the plastids, mitochondria and some bacteria are called as– **Porins**	**TS EAMCET-12.05.2017**
Fernandez-Moran subunit can be observed in– **mitochondria**	**Tripura JEE-2017**
Cristae help in– **respiration**	**Manipal - 2002 AFMC-2000**
Mitochondria will be found in abundance in cells of tissues having– **Maximum activity**	**Manipal-2011**
The size of mitochondria in plant cell is– **1.0-4.0 µm long**	**AMU-2010**
The catalase-containing vesicles present in liver and leaf cells are called– **Peroxisomes**	**AMU-1999**
The inner membrane of mitochondria bears folding / finger like projections called cristae, these cristae– **Increases surface area**	**VMMC-2006**
The organelle which bear anthocyanin is– **Vacuole**	**Manipal-2000, Punjab MET- 2004**

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Oxysomes are located inside–	**Mitochondria**	**JIPMER-2001**
Maternal inheritance is due to the genes present in–	**Mitochondria**	**JIPMER-2001**
ATP synthesis occurs on the–	**Inner membrane of mitochondria**	**Manipal-2013**
Mesosome is substitution of mitochondria in–	**E. coli**	**JIPMER-2013**
Amount of DNA present in the mitochondria of Neurospora is–	**1%**	**BHU PMT (Screening)-2011**
The function of glyoxysome is–	**Fat metabolism**	**DUMET-2001**
The cell organelle involved in the glycosylation of proteins is–	**Endoplasmic reticulum**	**Haryana PMT-2010**
Lysosomes cell organelle show–	**Polymorphism**	**BVP-2013**
Pyruvate dehydrogenase complex needed for the conversion of pyruvic acid to Acetyl Co-A is located in–	**Matrix of mitochondria**	**Karnataka CET-2010**
The powerhouse of cell is first discovered by–	**Kolliker in 1850**	**JIPMER-2016**
Genes for cytoplasmic male sterility in plants are generally located in–	**Mitochondrial genome**	**JIPMER-2007**
ATP is–	**Nucleotide**	**AIPMT-2000**
Animal cells after removal of nuclei still contained DNA The source of this DNA is–	**Mitochondria**	**KVPY (SA)-2013**
Foldings of inner membrane of mitochondria are called–	**cristae**	**AIIMS-1998 / AIPMT-1994**
Chemiosmosis hypothesis given by Peter Mitchell proposes the mechanism of–	**Synthesis of ATP**	**Karnataka CET-2011**
Genes present in the cytoplasm of eukaryotic cells are found in–	**Mitochondria and inherited via egg cytoplasm**	**AIIMS-2006**
Both oxysomes and quantasomes are found in–	**Mitochondria and Chloroplasts respectively**	**J&K CET-2000**
The mechanism of ATP formation both in chloroplast and mitochondria is explained by–	**Chemiosmotic theory**	**JCECE-2012**
The organelle associated with aerobic respiration is–	**Mitochondria**	**J&K CET-2005**
The cisternae that make up the Golgi complex are–	**Polarized**	**MP PMT-2013**
Mitochondrial porins are located in–	**The outer membrane**	**AMU-2014**
The synthesis of ATP mitochondria takes place in–	**Cristae**	**J&K CET-2013**
The significance of mitochondria was given by–	**Altman**	**MGIMS Wardha-2012** **Rajasthan PMT-1999**
Besides nucleus , DNA is also present in -	**Mitochondria**	**Rajasthan PMT-1995**
The cell organelles involved in energy transformation are–	**Chloroplast and mitochondria**	**Rajasthan PMT-2001**
Synthesis of ATP in mitochondria requires–	**Oxygen**	**CMC Vellore-2011**
Quantasomes are present in–	**Chloroplast**	**UPCPMT-2002, BVP-2009**
Small particles projecting from the inner membranes and cristae of mitochondria are known as–	**Oxysomes**	**WB JEE-2008**
ATP synthesis in cell requires–	**H^+ gradient across the membrane**	**WB JEE-2015**
Plastid		
The colourless plastids that store starch are called–	**Amyloplast**	**Tripura JEE-2021** **JIPMER-1996**
Chl -b differs from chl -a by–	**$-CH_3$ and – CHO group**	**JIPMER-2019**
Cup-shaped chloroplast is the characteristic of–	**Chlamydomonas**	**Tripura JEE-2019**
Plastids contain–	**Thylakoid structures**	**Tripura JEE-2018**
Anthocyanin pigment is found in–	**Cell sap**	**Rajasthan PMT-1996**
Plastocyanin contains–	**Copper**	**UP CPMT-2010**
Abscisic acid is primarily synthesized in–	**Chloroplast**	**J&K CET-2009**
Camouflage of chameleon is associated with–	**Chromatophore**	**AIIMS-1995** **AMU-2011**
Aleuroplasts in a cell stores–	**protein**	**AMU-2010**
The chemical formula of chlorophyll-b is–	**$C_{55}H_{70}O_6N_4Mg$**	**HP CET-2013**

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Plastids of an etiolated plant possess– **chlorophylloid and carotenoids**	**AMU-2008 VMMC-2008**
In chloroplasts, chlorophyll is present in the– **thylakoids**	**Manipal-2007 J&K CET-2000**
In higher plants, the shape of the chloroplast is– **discoid**	**UP CPMT-2013 DUMET-2009**
Highest number of enzymes are found in– **mitochondria**	**Haryana PMT-2008**
In mitochondria, enzymes responsible for Krebs cycle are present in– **matrix**	**Haryana PMT-2006**
Coupling factor F is found in– **Thylakoids**	**J&K CET-2007**
Chloroplast has their own– **DNA**	**Rajasthan PMT-2000**
Aleuroplast is a type of leucoplasts which stores– **Protein**	**CMC Ludhiana -2013**
Elaioplast store– **Fats**	**CMC Ludhiana-2012 DUMET - 2011, 2007**
Proteinaceous nature of enzyme was suggested by– **Sumner**	**BCECE-2003**
Thylakoids are present in– **Chloroplast**	**AMU-2002**
Grana are present inside the– **Chloroplast**	**AMU-2001**
A pigment concerned with both floral induction and seed germination is– **Phytochrome**	**BVP-2006**
A pigment, which absorbs red and far red light, is– **Phytochrome**	**AIIMS-1994**
It is common between chloroplasts, chromoplasts and leucoplasts– **Ability to multiply by a fission-like process**	**AIIMS-2006**
All types of plastids possess essentially the same structure because they– **Can transform from one form to another**	**AIPMT-1992**
Pyrenoids are centre of– **Starch storage**	**CMC Vellore-2012**
Elementary particles occur– **in mitochondria**	**JIPMER-1996**
Example of water soluble plant pigment is– **anthocyanin**	**NEET-2016 Phase-I WB JEE-2011**
Mesosomes are analogous to– **Mitochondria**	**Rajasthan PMT-1997**
Showy and attractive colour of fruits is due to the presence of– **Chromoplasts**	**J&K CET-2001**
Thylakoid is discovered by– **Menke**	**Rajasthan PMT-1995**
The ATP synthase of chloroplasts is like that of– **Mitochondria**	**Punjab MET-2005**
Ribosome and Cytoskeleton	
Ribosomes of bacteria, mitochondria prokaryotes and chloroplasts are of– **70S type**	**MHT CET-08.10.2020 Shift-I Tripura JEE-2017 BCECE-2015 JCECE- 2010, AMU-2009 Punjab MET – 2008 J&K CET-2007, 2002 JIPMER-1997, 2000**
Ribosomes are made up of– **r RNA and protein**	**KVPY (SA) – 2018 UPCPMT – 2004 BVP - 2002 AMU-1999,1995**
Nucleolus is the site for the synthesis of– **ribosomes**	**BVP-2008 AMU-2007 Uttarakhand PMT-2007 UP CPMT-2001**
The metal ions required for the association of the two subunits of the prokaryotic ribosomes– **Magnesium ion**	**AP EAPCET-23.05.2023, Shift-I**
If the pH in lysosomes is increased to alkaline, the outcome will be– **Hydrolytic enzymes will become inactive**	**NEET (Re-Exam)-04.09.2022**
Peptide synthesis inside a cell takes place in– **Ribosomes**	**AP EAMCET-03.09.2021 Shift-I**
Ribosomes were first observed by– **George Palade**	**AIPMT-1991 AP EAPCET-07.09.2021 Shift-I**
Polysome is formed by– **Several ribosomes attached to a single mRNA**	**MHT CET-07.10.2020 Shift-I BHU PMT (Screening)-2010 AIPMT-2008,1989 NEET- 2016 Phase I**

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The movement of ribosome along the length of mRNA is called– **Translocation**	**Tripura JEE-2018**
A cell organelle which lacks membrane, consists of 65% rRNA, 35% proteins and helps in protein synthesis is– **Ribosome**	**MHT CET-2017**
Ribosome cell organelle lacks– **Membrane**	**AIPMT (Re-Exam)-2015** **WB JEE-2010** **Rajasthan PMT-1996**
Tubulin protein occurs in– **Microtubules**	**BVP-2010** **AMU-2003**
The primary function of intermediate filament is– **Provide mechanical stability**	**Manipal-2011**
The cytoskeleton of cell is made of- **microtubules, microfilaments and intermediate filaments**	**UP CPMT-2012**
In an animal cell, protein synthesis takes place– **Cytoplasm as well as mitochondria**	**AFMC-2007**
Ribosomes is the site of translation of the– **mRNA**	**J&K CET-2012**
The plane of cell wall formation in a dividing cell is determined by–**microtubules**	**J&K CET-2012**
Normal pH of protoplasm– **6.8**	**CG PMT-2007**
The thylakoid in chloroplast are arranged as– **stacked discs**	**Haryana PMT-2005**
Site of formation of ribosomal precursor or ribosomal sub-units in a cell– **nucleolus**	**Manipal-2013** **BVP-2010**
Cell organelle common in Monera and Protista– **Ribosome**	**VMMC-2010** **AMU-2003**
Ribosomes are attached to endoplasmic reticulum through– **Ribophorin I & II**	**J&K CET-2007**
Chloroplast is more important for– **Photosynthesis**	**CG PMT-2011**
The Sub-units of 80S ribosome will be– **60S and 40S**	**JIPMER-2016, 1996** **DUMET-2008** **CG PMT-2005**
The two subunits of ribosome remain united at a critical ion level of–**magnesium**	**BHU PMT (Screening)-2010** **AIPMT-2008**
The smallest cell organelles, known as protein factories, discovered by George Palade in animal cell in 1953 these are– **Ribosomes**	**UP CPMT-2014**
An elaborate network of filamentous proteinaceous structures present in the cytoplasm which helps in the maintenance of cell shape is called– **Cytoskeleton**	**AIPMT (Mains)-2010**
Cytoskeleton is made up of– **Proteinaceous filaments**	**AIPMT-2009**
Ribosome may also be called– **Ribonucleoprotein**	**VMMC-2007** **Rajasthan PMT-1999, 2006** **UPCPMT-2002**
A non-proteinaceous enzyme is– **Ribozyme**	**NEET-2016 Phase-II**
The solid linear cytoskeletal elements having a diameter of 6 nm and made up of a single type of monomer are known as– **Microfilaments**	**AIPMT-2014**
Main component of ribosomes are– **RNA and protein**	**JCECE-2007** **DUMET-2004** **Rajasthan PMT - 1995**
Ribosomes that occur exclusively in mitochondria is– **55S**	**DUMET-2004**
Ribosomes are essential for protein synthesis, but they are present in Mitochondria and plastids, the sites of respiration and photosynthesis. The role of ribosomes in these cell organelles is– **Sub units of some required proteins are synthesized in these organelles**	**AP EAMCET-2015**
In ribosomes letter S signifies– **Svedberg constant**	**J&K CET-2001**
Number of protofilament in microtubule is– **13**	**DUMET-2007**
Microtubules is discovered by– **de Robertis and Franchi**	**BVP-2006**
Microtubule is involved in the– **cell division**	**Punjab MET-2010**
Cilia and Flagella	
Flagella of prokaryotic and eukaryotic cells differ in– **Micro-tubular organization and type of movement**	**CMC Ludhiana-2009** **Manipal-2007, AIPMT-2004** **MANIPAL-2014** **AFMC-2008**

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The sequential movement of cilia, in a longitudinal row, one after the other in one direction is called– **Metachronous movement**	**AP EAMCET-12.07.2022 Shift-II**
Cross bridges between peripheral microtubules of cilia and flagella are made up of motor protein– **dynein**	**MHT CET-06.10.2020 Shift-I**
If the flagellum is provided with two or more rows of lateral appendages and the axoneme ends in a terminal naked filament, then it belongs to this type– **Pantacronematic**	**TS EAMCET-02.05.2018 Shift-I**
The cell organelle involved in the formation of a flagellum/cilium–**Basal granule**	**TS EAMCET-12.05.2017**
The number of microtubules in a flagellum including those sharing three protofilaments with each other is– **20**	**DUMET-2010**
The filaments present in cilia and flagella are composed of– **microtubules**	**VMMC-2006**
An organism exclusively with 70 S type of ribosomes contains– **Circular naked DNA**	**AP EAMCET-2004**
Ribosomal RNA (rRNA) is synthesized in– **nucleolus**	**CG PMT-2009**
The number of RNA molecules in 60S sub – particles of 80 S ribosomes are– **three**	**CG PMT-2009**
Bacterial flagella do not show ATPase activity and 9 + 2 organization. These are chemically– **Flagellin**	**AFMC-2006** **Uttarakhand PMT-2007**
Term basal body is associated with the development of– **cilia and flagella**	**VMMC-2007**
The spindle microtubules are polar, their orientation is– **Negative (–) ends towards the poles**	**AMU-2003**
Flagella with single strand and composed of flagellin is found in– **Prokaryotes**	**J&K CET-2002**
Prokaryotic flagella Possess– **Helically arranged protein molecule**	**AMU-1995**
Male gemetes are flagellated in– **Ectocarpus**	**AIPMT-2015**
The motile bacteria are able to move by– **Flagella**	**AIPMT-2014**
The filament in flagellum can rotate by– **360º**	**BCECE-2015**
Principle protein of cillia and flagella is– **Tubulin**	**BVP-2014** **MGIMS Wardha-2006** **AP EAMCET-2001**
Centrosome and Centrioles	
Plants cell differs from an animal cell in the absence of– **Centrioles**	**AMU-2012** **BHU PMT (Mains)-2011** **UP CPMT-2007**
When the centromere of a chromosome is located near the tip of the chromosome, the position is described as– **telocentric**	**JIPMER-1999**
Replication of centriole occurs during– **Interphase**	**Manipal-2008** **BCECE-2014** **Uttarakhand PMT-2008**
The flagellumin Astasia is– **Stichonematic**	**AP EAMCET-2002**
Astral rays are formed of– **Microtubules**	**VMMC-2008**
Human sperm cells move by means of a– **Flagellum**	**CG PMT-2010**
Microtubules are the constituents of– **Spindle fibres, Centrioles and Cilia**	**NEET-2016 Phase-I**
Centromere is required for– **Movement of chromosomes towards poles**	**JIPMER-2007** **AIPMT-2005, 1994**
The modified cell organelle involved in the formation of cilium and flagellum– **Centriole**	**AP EAMCET-2016**
Organelle important in spindle formation during nuclear division is– **Centriole**	**J&K CET-2005**
Nucleus and Microbodies	
L-shaped chromosomes are also called– **Sub-metacentric**	**JIPMER-2009** **Haryana PMT-2011** **UP CPMT-2012, 2008** **VMMC-2012** **Uttarakhand PMT-2008** **BHU PMT (Screening)-2008** **CGPMT-2008, 2004** **Manipal 2008, BVP 2007** **BHU PMT 2004, UP CPMT 2003** **UP CPMT 2012** **CG PMT 2008 / BVP 2007**

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The nucleus is separated from surrounding cytosplasm by a nuclear membrane, which is– **double layered with pores**	**Punjab MET-2004 VMMC-2004 HP CET-2012 Manipal-2000 Manipal-2012**
Balbiani rings are the structural features of– **polytene chromosomes**	**JIPMER – 2008 Punjab MET – 2006 Karnataka CET-2004 Manipal-2011, 2002**
If centromere is the middle, the chromosome is called– **Metacentric**	**AIIMS-2000 CG PMT-2007 MGIMS Wardha-2005 UP CPMT-2005 AMU-2002**
Giant chromosomes are found inside– **salivary glands of Drosophila**	**BCECE-2014 DUMET-2006 CG PMT-2004 / AMU-2002**
Centromere is a part of– **chromosome**	**HP CET-2013 VMMC-2003 BHU PMT-2002 Haryana PMT - 2000**
Telomere has a unique property of– **prevention of ends of the chromosomes from sticking together**	**MHT CET 5.10.2020 Shift-I**
In prokaryotes both transcription and translation take place in cytoplasm as there is no– **nucleus**	**MHT CET-07.10.2020 Shift-I**
Nucleolus is an organelle responsible for the production of– **ribosomal RNA**	**NEET-2018 UPCPMT-2013 KVPY SB & SX-2013**
A chromosome in which the centromere is situated close to its end so that one arm is very short and the other very long is– **acrocentric**	**JIPMER-2017 DUMET-2009 MHT CET-2014**
The approximate size of nucleus in a typical mammalian cell is– **10^{-6} meter**	**MHT CET-2017**
Spindles are formed by– **microtubules**	**Rajasthan PMT-2004**
Balbiani rings are the centre for– **RNA synthesis**	**AIPMT-1993 BCECE-2011**
The point at which polytene chromosome appear, to be attached together is called– **Chromocentre**	**AMU-2006 Karnataka CET-2006 Punjab MET-2003**
Connecting link of characters between one generation to another generation is– **DNA**	**Rajasthan PMT-1996**
Genes are present on– **Chromosomes**	**UP CPMT-2003**
The shape of chromosome is determined by– **Centromere**	**BVP-2008 Uttarakhand PMT-2007 UP CPMT-2001**
The long and short arms of chromosome are designated respectively as– **Q and p arms**	**DUMET-2010**
Nucleus of Monocystis is– **Spherical**	**Uttarakhand PMT-2004**
Chromosomes is stained using– **Acetocarmine**	**BHU PMT (Screening)-2009 Uttarakhand PMT-2009**
Lampbrush chromosomes are seen in– **meiotic prophase**	**JIPMER-2003**
Nucleolus is a– **Round structure in side nucleaus and having rRNA**	**Punjab MET - 2007 Rajasthan PMT-1998**
Two homologous chromosome are connected at– **Centromere**	**MGIMS Wardha-2007 Rajasthan PMT-1998**
The haploid complement of chromosomes of an organism constitutes– **Genome**	**CG PMT-2007**
The chromosomes as thread like structures in nucleus was first described by– **Strasburger**	**CG PMT-2007**
Lampbrush chromosomes are found inside– **Oocytes of frog**	**CG PMT-2007 JIPMER-2001**

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Export firm of the body is– **Golgi bodies**	**Haryana PMT-2007**
When centromere is present at one end, the chromosome is– **Telocentric**	**CMC Ludhiana-2008** **J&K CET-2007** **AMU-2006**
The exchange of one part of a chromosome to the other part of same or another chromosomes is called– **translocation**	**JIPMER-2001**
A nucleus pulposus is found in– **Center of intervertebral disc**	**Haryana PMT-1999**
Four different types of chromosomes but of the same size are sequenced as– **metacentric, submetacentric, acrocentric telocentric**	**Haryana PMT-1999**
When the chromosome has a centromere nearer to one end of the chromosome resulting into one shorter and one longer arm, the chromosome is termed as– **Sub-metacentric**	**AMU-2012**
The controlling centre of cell is– **Nucleus**	**MGIMS Wardha-2011**
The longest chromosome is seen in– **Trillium**	**J&K CET-2007**
Nuclear membrane is continuous with– **Rough endoplasmic reticulum**	**Rajasthan PMT-2009**
Structure of nuclear membrane helps in– **Nucleo - cytoplasmic exchange of material**	**UPCPMT-2002** **VMMC-2007**
Centromere is also called– **primary constriction**	**BCECE-2003**
Telomere repetitive DNA sequences control the function of eukaryote chromosomes because they– **Prevent chromosome loss**	**AIPMT-2007**
The part of chromosome beyond the secondary constriction is known as– **Satellites**	**VMMC-2014** **AP EAMCET-2001, 2023** **UP CPMT-2014**
Spindle fibre unite with which structure of chromosomes– **Kinetochore**	**AIPMT-2000**
Function of telomeres in nucleus– **To seal the ends of chromosome**	**AIPMT-2000**
Role of microtubules– **To help in cell division**	**AIPMT-1998**
The term nucleolus was coined by– **Bowman**	**AFMC-2001**
In nucleoplasm, a spherical body attached to particular chromosome on a definite position is called– **Nucleolus**	**BHU PMT (Mains)-2010** **Punjab MET-2007**
Plant and animal cells, both have in common– **Cell membrane and nucleolus**	**BVP-2005**
Two sister chromatids are attached with– **Centromere**	**BVP-2000**
Genetically active area of chromosome is called– **Euchromatin**	**BVP-2000**
In salivary gland chromosomes/polytene chromosomes, pairing is– **Formed between homologous chromosomes**	**AIPMT-1993**
Lowest number of chromosomes are found in– **Ascaris Megalocephala**	**Punjab MET-2006**
Lampbrush chromosomes are seen in– **Diplotene stage**	**JCECE-2014** **Rajasthan PMT-1999** **DUMET-2006**
One key function of nuclear pores is to– **Allow molecules like protein to move in and out of the nucleus**	**MGIMS Wardha-2015**
The function of glyoxysome is– **Fat metabolism**	**DUMET-2002**
The function of peroxisomes is– **H_2O_2 destruction**	**WB JEE-2015** **DUMET-2002**
The glyoxysome was discovered by– **Beevers and Breidenbach**	**Rajasthan PMT-1997**
Nucleus was discovered by– **Robert Brown**	**J&K CET-2001**
A student wants to study metaphasic behavior of chromosomes in a living cell. The technique most suitable is– **phase contrast microscope**	**MGIMS Wardha-2006**
A chromosome having sub-terminal centromere is called– **acrocentric**	**CG PMT-2004**
The term 'chromosome' coined by– **W.Waldeyer**	**CG PMT-2004**
Structure present over the chromosomes is– **centromere**	**CG PMT-2004**
Within the nucleus, DNA is organized along with proteins into material called– **chromatin**	**Punjab MET-2005**

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09.

BIOMOLECULES

9.1 How to Analyze Chemical Composition

- The simplest amino acid is– **Glycine**
- The stored form of sugar in animal is a– **Homopolysaccharide (Glycogen)**
- The acid used for preliminary separation of biomoleucle in a living tissue is– **Trichloroacetic acid**
- Amino acids have both an amino group and a carboxyl group in their structure. Amino acid is– **Glycine**
- An amino acid under certain conditions have both positive and negative charges simultaneously in the same molecule. Such a form of amino acid is called– **Zwitterionic form**
- The correct order of chemical composition of living tissues/cells in term of percentage of the total cellular mass is– **H_2O > proteins > nucleic acids > carbohydrates > lipids > ions**
- The organic compounds are acid insoluble fraction is– **Proteins, Nucleic acids, Polysaccharides, Lipids**
- The organic compounds is acid insoluble fraction but molecular weights do not exceed 800 Da is– **Lipids**
- Take a living tissue, grind it in trichloroacetic acid using pestle and mortar, and then strain it, you would obtain two fractions : acid-soluble and acid-insoluble fraction. Acid-insoluble fraction does not contain– **Flavonoids and alkaloids**
- Aromatic amino acid is– **Tyrosine, Phenylalanine, Tryptophan**
- Arachidonic acid has how many carbon atoms– **20**
- Lecithin in constituent of– **Cell membrane**
- 98% of living organism is formed of six elements-carbon, hydrogen, nitrogen, oxygen and– **Calcium and Phosphorus**
- Percentage weight of element that is very little in earth's crust and negligible in human body respectively are– **N and Si**
- A basic amino acid is– **Lysine**
- Principal organic constituent of a living being in order of relative abundance is– **Protein**
- Triglyceride consists of– **Three fatty acids + one glycerol**
- Glutamic acid is a– **Amino acid**
- The amino acid has hydroxyl in the R-group– **Serine**
- The relative abundance of the following elements with respect to other elements is higher in human body than in earths crust- **Carbon, hydrogen, oxygen**
- Trihydroxy propane is– **Glycerol**
- Correct set of components found in a nucleotide– **Heterocyclic compound, pentose sugars, phosphoric acid**
- The acidic nature of amino acids depends on– **An amino group and a carboxyl group**
- During tissue extraction, the tissue can be grind in– **Trichloroacetic acid**
- A unit composed of sugar and nitrogen base linked by glycosidic bond is– **Nucleoside**
- Ester linkages occur in– **Lipids**

9.2 Primary and Secondary Metabolites

- Primary metabolite is a– **Glucose**
- The role of secondary metabolites is/are– **Useful to human welfare, Ecologically important**
- Polymeric compound is– **Rubber**
- Secondary metabolite as well as a drug– **Vinblastin**
- Biological toxine are– **Abrin, Ricin**

9.3 Biomacromolecules & Proteins

- Quaternary structure of protein is– **Consist of two or more polypeptide subunits**
- Unsaturated fatty acids have– **One or more double bonds**
- Most abundant protein in human body is– **Collagen**
- Primary structure of protein is due to the presence of– **Peptide bonds**
- Lecithin is a– **Phspholipid**
- Biomolecules are– **Organic compounds**
- Fish proteins are considered nutritionally superior to most vegetable proteins because they are rich in– **Essential amino acids**
- Human haemoglobin contains– **Tertiary structure, Secondary structure, Quaternary structure**
- That structural level enables the proteins to function as enzymes– **Tertiary**
- The primary structure of a protein molecule has– **Two ends**
- Proteins perform many physiological functions. For example, some proteins function as enzymes. An additional function that some proteins perform– **Hormones**
- At some points a protein chain may be folded back on itself like a hollow woollen ball. This is called ..... structure and folds or coils are held together in place by ..... – **3^0, H-bonds**
- A β-pleated sheet organisation in a polypeptide chain is an example of– **2^0 structure**
- Adult human haemoglobin consists of– **4 subunits (2α, 2β)**
- Primary structure of proteins is due to the presence of– **Peptide bonds**
- The DNA double helix contains ..... base pairs per turn of the helix and each turn is ..... long– **10, 34A**

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- ..... is the most abundant protein in animal world and ..... is the most abundant protein in the whole biosphere. **Collagen, RuBisCO**
- The molecular formula of a polypeptide consisting of 10 glycine molecules when the formula of glycine is $C_2H_5O_2N$– **$C_{10}H_{32}O_{11}N_{10}$**
- Collagen, Trypsin, Insulin, Antibody, Receptor, GLUT-4- **Protein group**
- Most abundant protein in animal world is– **Collagen**
- The most abundant protein in the whole of the biosphere is– **RuBisCO**
- The odd one out with respect to proteins– **Inulin**
- First amino acid in the structure of proteins is known as – **N – terminal**
- Acid insoluble fraction is– **Lipid**
- The biomolecule found in the macromolecular fraction of the living tissue with small molecular weight among the following is– **Lipids**
- The following compound enables glucose transport into the cells– **GLUT-4**
- The helical structure of proteins is stabilized by– **Hydrogen bonds**

9.4 Polysaccharides

- ..... carbohydrates is a heteropolysaccharide– **Hyaluronic acid**
- The chitinous exoskeleton of arthropods is formed by the polymerisation of– **N- acetyl glucosamine**
- Cellulose is the polymer of– **β-D glucose**
- Glycogen is a homopolymer made up of– **Glucose units**
- Plant cell walls are made of– **Homopolymer of glucose**
- Inulin is a polymer of– **Fructose**
- Dahlia starch is used for– **Testing of kidney functions**
- Cellulose does not contain complex helices because– **It cannot hold I_2**
- Glycogen is related to– **Starch**
- The odd one out with respect to polysaccharides– **Thymine**
- Plant cell walls are made of– **Cellulose**
- Exoskeleton of arthropods is made up to– **Chitin**
- Store house of energy in plant tissue is– **Starch**
- Store house of energy in animal tissues is– **Glycogen**

9.5 Nucleic Acids

- The information in a nucleic acid resides in the– **Sequence of nucleotides**
- Relation between amino acid and protein is similar to– **Nucleosides and nucleic acid**
- A nucleotide is formed of– **Nitrogen base, sugar and phosphate**
- The most basic amino acids is– **Argenine**
- Nucleotides are building blocks of nucleic acids. Each nucleotide is a composite molecule formed by– **Base-sugar-phosphate**
- Building blocks of nucleic acids is– **Nucleotide**
- A fat has– **One glycerol and 3 fatty acid molecules**
- A nucleosides differs from nucleotide is not having– **Phosphate**
- Non-essential amino acids only– **Glycine, Serine, proline, glutamic acid**
- The number of 'ends' in a glycogen molecule would be– **Equal to the number of branches plus one**
- Purines have nitrogen atoms at ..... positions– **1', 3', 7', 9'**
- Pyrimidines have nitrogen atoms at ..... positions– **1', 3'**
- Pyrimidine is group of– **Uracil and cytosine**
- Building block of nucleic acid is– **Nucleotide**
- Adenine, pentose sugar and a phosphate group interact to form– **Adenylic acid**
- Sugar found in DNA is– **Deoxyribose**
- How many members are present in the ring of adenine– **9**
- Nucleotide do not contributes to form a– **Monosaccharide**
- Purine is a– **Guanine**
- The number of hydrogen bond between guanine and cytosine– **3**
- Nitrogen bases of RNA are– **AGCU**
- DNA lacks following nucleotide– **Uridylic acid**
- Substituted purines are– **Adenine, guanine**

9.6 Structure of Proteins and Nature of Bond Linking Monomers in a Polymer

- Inorganic catalyst work efficiently at ____ temperature and _____ pressure– **High, High**
- Transition state structure of the substrate formed during an enzymatic reaction is– **Transient and unstable**
- When triglycerides are solid at ordinary room temperature, they are called– **Fats**
- Antiparallel strands of a DNA molecule means– **The phosphate groups at the start of two DNA strands are in opposite position (pole)**
- Inulin is a polymer of– **Fructose**
- The two functional groups characteristic of sugars are– **Carbonyl and hydroxyl**
- Sugars have the same number of carbon as present in glucose is– **Fructose**
- When we homogenise any tissue in an acid the acid soluble pool represents– **Cytoplasm**
- The most abundant chemical in living organisms could be– **Water**
- The bonds are present in between the two amino acids of a protein– **Peptide bond**
- Bonds are present in between the monosaccharides of polysaccharide– **Glycosidic bond**
- The bond formation dehydration process does not occured– **Between purines and Pyrimidines**
- Bond existing between sugar and nitrogen base of nucleic acid is– **Glycosidic bond**
- That structure is absolutely necessary for the many biological activities of proteins– **Tertiary structure**
- The primary structure of protein represents– **Linear sequence of amino acids joined by peptide bond**
- The long protein chain is folded upon itself like a hollow woolen ball, giving rise to– **Tertiary structure**

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- Adult human hemoglobin consists of– **Two alpha and two beta subunits**
- The positional information in a protein can be given by– **Primary structure**
- In the primary structure of a protein– **Amino acids are arranged as a line**
- More than one polypeptide chains are assembled together then called– **Quaternary structure**
- Number of hydrogen bonds formed between adenine and thymine is– **2**

9.7 Metabolic Basis and the Living State

- The charged molecule which is electrically neutral is known as– **Zwitter ion**
- Hexokinase (Glucose + ATP → Glucose 6-Phosphate + ADP) belongs to the category– **Transfereases**
- According to weight percentage, the first three elements in human body are– **O > C > N**
- Glycerol is a– **Trihydroxy propane**
- Maltose formula is– **$C_{12}H_{22}O_{11}$**
- Homopolysaccharide is a– **Inulin**
- ..... glucose transporters is insulin-dependent– **GLUT 4**
- The vitamin nicotinamide can be synthesised in our body from– **Tryptophan**
- The least likely to be involved in stabilising the three-dimensional folding of most proteins is– **Ester bonds**
- The substance having glycosidic bond and peptide bond, respectively in their structure is– **Inulin, insulin**
- As and when needed, ... bond energy is utilised for biosynthetic, osmotic and mechanical work that we perform– **Chemical**
- Glycolysis is a metabolic pathway that involves the conversion of glucose to lactic acid occurs in ..... metabolic steps– **10**
- Energy currency of the cell is– **ATP**
- The living state is a/an ..... steady-state to be able to perform work– **Non-equilibrium**
- Acetic acid transforms into– **Cholesterol**

9.8 Enzymes

- Ribozyme is– **RNA with enzyme activity**
- Turn over number of enzyme depends upon– **Number of the active sites**
- The effectiveness of an enzymes is least affected by– **Original activation energy of the system**
- ..... The reactions is not enzyme-mediated in biological system. **Dissolving CO_2 in water**
- The rate of chemical reaction can be expressed as– $\frac{\delta P}{\delta t}$
- Enzymes are most functional within the temperature range of– **25^0 - 40^0C**
- Enzymes catalyse the biochemical reactions by ..... the activation energy– **Lowering**
- The inhibitor which closely resembles the substrate in its molecular structure and inhibits the enzyme activity by binding to the active site of the enzyme is called– **Competitive inhibitor**
- Inhibition of succinate dehydrogenase by malonate is an example of– **Competitive inhibition**
- Enzymes that catalyse removal of groups from substrates by mechanisms other than hydrolysis, and addition of groups to double bonds are called– **Lyases**
- Dihydroxyacetone 3-phosphate and glyceraldehyde - phosphate are interconvertible. The enzyme responsible for this interconversion belongs to the cateogry of– **Isomerases**
- Co-enzyme nicotinamide adenine dinucleotide (NAD) contains vitamin– **Niacin**
- Zinc is a co-factor for proteolytic enzyme– **Carboxypeptidase**
- The enzyme has accelerated the reaction rate by about how many times– **10 Million**
- Enzymes generally function in– **Narrow range of temperature and pH**
- If 'P' (product) is at a lower level than 'S' (substrate), the reaction is an– **Exothermic reaction, Spontaneous reaction**
- An apoenzyme is a– **Protein**
- Enzymes that catalyse removal of groups from substrate by mechanisms other than hydrolysis leaving double bonds belongs to– **Lyases**
- Chemical reaction requires energy for– **Activation**
- That enzyme is concerned with transfer of electrons– **Dehydrogenase**
- The effect of competitive inhibitor can be reversed by– **Increasing the substrate concentration**
- K_m value is related to– **ES complex**
- The enzyme loses its catalytic activity by the removal of– **Prosthetic group, Co-enzyme, Metal ions**
- The difference in the average energy content of 'S' from that of transition state is known as– **Activation energy**
- Lyases enzyme catalyzes– **Removal of functional groups**
- The odd one out with respect to co-factors– **– Isomerase**
- An example of feedback inhibition is– **Allosteric inhibition of hexokinase by glucose 6- phosphate**
- Cofactor for the proteolytic enzyme carboxypeptidase is– **Zinc**
- An organic substance bound to an enzyme and essential for its activity is– **Coenzyme**
- Coenzyme contains vitamin niacin–**NAD^+ or $NADP^+$**
- Example of prosthetic group is– **Heme**

9.9 Miscellaneous

- Macromolecule chitin is– **Nitrogen containing polysaccharide**
- The most abundant protein in the animals is– **Collagen**
- Concanavalin A is– **A lectin**
- The two functional groups characteristic of sugars are – **Carbonyl and hydroxyl**

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EXAM POINT

Analysing and Composition	
Simplest amino acid is– **glycine**	**NEET-2020 phase- I AP EAMCET-2011 JIPMER-2010, 2007 WBJEE-2007, AIPMT-2005 HARYANA PMT-2001 AFMC-2000**
Lactose is composed of– **glucose + galactose**	**JIPMER-2013**
'Elicitors' are molecule which stimulate production of– **Secondary metabolites**	**CG PMT-2010**
Most abundant mineral of animal body is– **calcium (Ca)**	**WB JEE-2010**
Carbohydrates, the most abundant biomolecules on earth, are produced by– **Some bacteria, algae and green plant cells**	**AIPMT-2005**
The major role of minor elements inside living organisms is to act as– **co-factors of enzymes**	**AIPMT-2003**
The most abundant molecule in cell is– **water**	**DUMET-2011**
Cereal proteins are deficient in– **Lysine amino acid**	**CG PMT-2010**
Arginine and lysine amino acids are present in– **Histones**	**Rajasthan PMT-2011**
Separation of amino acid and carboxylic groups is called– **deamination**	**VMMC-2007 Rajasthan PMT -2005 UPCPMT-2002**
Sulphur containing amino acids are– **cysteine, methionine and taurine**	**BVP-2014, 2010**
Ninhydrin can be used to detect– **Amino acids**	**KVPY SB & SX-2015**
Before cellular respiration, amino acid undergo the process of– **deamination**	**DU MET-2004 UPCPMT-2002 Rajasthan PMT-1998**
Structure of Amino acid and its Properties	
The primary precursor of Indole-3- acetic acid is– **Tryptophan**	**AP EAPCET-11.07.2022 Shift-I**
Formula of Glycine– **$C_2H_5NO_2$**	**AP EAPCET-12.07.2022 Shift-I**
Initiation of polypeptide chain is through– **Methionine**	**CMC Vellore-2012**
The reaction, Amino acid + ATP → Aminoacyl AMP + P-P depicts– **amino acid activation**	**DUMET-2011**
Fish proteins are considered nutritionally superior to most vegetable proteins because they are rich in– **essential amino acids**	**AMU-2014**
Lipid and Function	
Paraffin wax is– **ester**	**UP CPMT-2008 BCECE-2010 VMMC-2012 BHU-PMT (Screening)-2006 CGPMT-2008**
Concanavalin A is– **a lectin**	**NEET-2019**
Lecithin is a– **phospholipid**	**NEET (Odisha)-2019 KVPY (SA)-2018**
Chemically wax is– **A lipid**	**VMMC-2003 HP CET-2013 Haryana PMT-2005**
Low calorie and low cholesterol is found in– **sunflower oil**	**Manipal-2010**
Most abundant lipid in the cell membrane is– **phospholipids**	**AFMC-2001**
The substrate for lipase enzyme is– **Lipid**	**WB JEE-2012**
Phospholipids are formed by the esterification of– **one glycerol and two fatty acid molecules**	**KVPY SB & SX-2015**

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Spoilage of oil can be detected by–	**Erucic acid**	**BHU PMT (Screening)-2010**
Hydrolysis of lipid yields–	**fatty acids and glycerol**	**J&K CET-2006** **Rajasthan PMT-2002**
Phospholipids are–	**amphipathic**	**JIPMER-2004**
Lipids are insoluble in water because lipid molecules are–	**Hydrophobic**	**AIPMT-2002**
Hydrolysis of lipid yields–	**fatty acids and glycerol**	**Rajasthan PMT-2002** **JCECE-2003**
In DNA molecule, the number of hydrogen bonds between adenine and thymine are–	**two**	**AP EAMCET-1997**
The enzyme which acts to hydrolyse or breakdown a polynucleotide chain into its component nucleotide is–	**Nucleases**	**CG PMT-2010**
Uracil base is present in RNA but not in–	**DNA**	**BCECE-2004**
Purines possess nitrogen at–	**1, 3, 7 and 9 position**	**WB JEE-2010**
A nucleoside is–	**base + sugar**	**Punjab MET-2003**
The number of hydrogen bonds present between guanine and cytosine are–	**3**	**AP EAMCET-11.07.2022** **SRM JEEE-2018** **Shift-II BVP-2014** **Rajasthan PMT-1996**
A nucleoside differs from a nucleotide in not having–	**phosphate group**	**DUMET-2010**
RNA and DNA are similar in–	**being polymers of nucleotides**	**AFMC-2007**
Nitrogenous Base		
Purine base is found in RNA–	**Guanine**	**CGPMT-2004** **MANIPAL-2001** **AIPMT-1996** **Rajasthan PMT-1995**
The bonds found in a polynucleotide chain between the individual nucleotides and nitrogen bases–	**Phosphodiester bond, Hydrogen bonds**	**AP EAPCET-22.05.2023, Shift-I**
Guanine is not a–	**Pyrimidine Nitrogen base**	**JIPMER-2008**
DNA and RNA are different molecules as–	**DNA has thymine and RNA has uracil**	**J&K CET-2002**
Adenine is a–	**purine base**	**Rajasthan PMT-1999** **AIPMT-1992**
The nitrogen base found only in DNA is also called–	**5-methyl uracil**	**Karnataka CET-2015**
Housekeeping proteins are found in–	**Golgi complex, endoplasmic reticulum and cytoskeleton**	**Manipal-2015**
Nitrogenous bases present in DNA–	**adenine, guanine, cytosine, thymine**	**AFMC-2010**
Primary and Secondary Metabolites		
The mineral elements required for carbohydrate translocation, photoysis of water and for chlorophyll synthesis are respectively–	**Boron, Manganese, Zinc**	**TS EAMCET-11.05.2023, Shift-I**
Glucose on reacting with Benedict solution may give the following precipitates except–	**Violet precipitate**	**AIIMS-26.05.2019 Shift-I**
Three crops that contribute maximum to global food grain production are–	**Wheat, rice and maize**	**AIPMT-2005**
Vitamin B_6 is also called–	**Pyridoxine**	**AIIMS-2010**
Antifeedant property occurs in–	**azadirachtin**	**WB JEE-2007**
Maltose gives rise to two molecules of–	**glucose**	**DUMET-2011**
Linoleic acid is an unsaturated fatty acid and its content is highest in–	**sunflower oil**	**J&K CET-2013**
A typical disacchride, maltose is composed of–	**two units of similar glucose**	**Manipal-2014**
The vitamin responsible for antisterile activity is–	**Vitamin E**	**Haryana PMT-2001**
Vitamins are–	**organic compounds**	**Rajasthan PMT-2001**

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Protein and its Structure		
Protein in silk thread is–	**fibroin**	**Punjab MET-2009 Rajasthan PMT-2009 UP CPMT-2003,2009 AMU-2006**
Regulatory proteins of a myofibril are–	**Troponin and tropomyosin**	**TS EAMCET-11.05.2023, Shift-II**
The biological value and Protein Efficiency ration (PER) of egg are–	**96 %, 3.8**	**AP EAPCET-23.05.2023, Shift-I**
The most abundant protein in the whole of the biosphere–	**RuBisCO**	**AP EAPCET-22.05.2023, Shift-II**
Motor protein in the myofibril that is able to convert chemical energy into mechanical energy is–	**Myosin**	**TS EAMCET-31.07.2022 Shift-II**
A protein or polysaccharide molecule that stimulates antibody formation is–	**Antigen**	**AP EAMCET-03.09.2021 Shift-II**
"Ramachandran plot" is used to confirm the structure of–	**Proteins**	**NEET (Odisha)-2019**
The most abundant proteins in the living world are–	**RuBisCO of plants and collagen of animals**	**Karnataka CET-2014**
Globular protein composed of oval or spherical molecule does not act like–	**Structural protein molecule**	**UP CPMT-2014**
Even after disruption of all the hydrogen bonds, which structural level of a protein molecules still remains intact–	**primary structure**	**AFMC -2011**
When breast feeding is replaced by less nutritive food low in proteins and calories, the infants below the age of one year are likely to suffer from–	**Marasmus**	**AIPMT-2009**
Secondary structure of protein, which is attached to lipid layer and lining the pores of cell membrane will be–	**α-Helix**	**AIPMT-1999**
Nitrogen is the main constituent of–	**protein**	**BHU PMT (Screening)-2011**
The water soluble protein associated with silk thread is–	**serecin**	**AP EAMCET-2006 Manipal-2010**
Richest source of protein is–	***Glycine max*(Soyabeen)**	**AMU-2003**
α- helical model of protein was proposed by–	**Pauling and Corey**	**AMU-2002 BVP-2000**
Mucin is an example of–	**Glycoprotein**	**AMU-2001**
The molecular weight of protein is–	**> 10000**	**BCECE-2005**
The casein is a–	**milk protein**	**BVP-2000**
Maximum application of animal cell culture technology today is in the production of–	**Vaccines**	**AIPMT-2003**
Not all proteins have a–	**Quaternary structure**	**BCECE-2015**
Proteins which help other proteins to fold properly are called–	**Chaperones**	**BCECE-2015**
A nutrient which is used to build protoplasm is–	**protein**	**Rajasthan PMT-2001**
Nucleic Acid		
The structures that appear as "Beads - on string" in the chromatin and the number of base pairs are–	**Nucleosome**	**AP EAPCET-22.05.2023, Shift-I**
Two consecutive nucleotides of a nucleic acid are linked with–	**phosphodiester bond**	**MHT CET-01.10.2020 Shift-I**
Nucleic acid occurs in–	**Mitochondria and chloroplast etc.**	**Karnataka CET-2007**
In three dimensional view the molecule of t-RNA is–	**L-shaped**	**AIPMT-2000**
Anticodon occurs in–	**t-RNA**	**AIPMT-2000**
Uridine present only in RNA is a–	**Nucleoside**	**NEET (Karnataka)-2013**
A nucleoside differs from nucleotide in not having the–	**phosphate group**	**J&K CET-2002**
Nucleic acid can be fragmented by the enzyme–	**nucleases**	**J&K CET-2002**
When a phosphate group is added to a nucleoside, an acid-soluble biomolecule is formed, called–	**nucleotide**	**Assam CEE-2014 BVP-2001 AIPMT-1991**
Basis of life are–	**nucleic acids**	**AIIMS-2011 Rajasthan PMT-1995**

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Flow cytometry allows detection of differences in length of nucleic acids as small as about– **1.5 Mbp**	**BCECE-2015**
Single stranded nucleic acid is found in– **$\phi \times 174$**	**DUMET-2003**
A stretch of DNA consisting of 10-20 bases is most appropriately be called as– **oligonucleotide**	**AMU-2014**
Nucleic acid is absent in– **Prion**	**Rajasthan PMT-1999**
Width of the DNA molecule is– **20 Å**	**BVP-2009**
Condensation product of adenine, ribose and phosphoric acid is named as– **adenylic acid**	**Punjab MET-2005**
Polysaccharides	
Co factor that forms coordination bonds with side chains at active site of enzyme– **Metal ions**	**AP EAPCET-23.05.2023, Shift-I**
Inulin is a polymer of– **Fructose**	**RE-NEET (UG)-06.06.2023 (Manipur)**
Cellulose does not form blue colour with Iodine because– **cannot hold iodine molecules**	**NEET (UG) 07.05.2023**
Most abundant organic compound on earth is– **Cellulose**	**J & K CET-2022 MHCET-2020 AIPMT-2001**
Monomer of Insulin– **Fructose**	**AP EAPCET-11.07.2022 Shift-I**
Polysaccharides can be tested by– **Iodine**	**AIIMS-26.05.2019 Shift-II**
Marcomolecule of Chitin are– **Nitrogen containing polysaccharide**	**NEET-2013**
Ribose sugar is present in– **RNA**	**Karnataka CET-2009**
Benedicts reagent test is conducted to confirm the presence of– **Reducing sugars**	**Karnataka CET-2008**
In a polysaccharide, number of monosaccharides are linked by– **glycosidic bond**	**Karnataka CET-2016**
Amylopsin acts upon– **Polysaccharide in alkaline medium**	**BHU-2007 Manipal-2011 BCECE-2011**
Mannitol is– **sugar alcohol**	**WB JEE-2011**
Mannose and Galactose is– **Hexose sugar**	**BCECE-2001**
The organic compound having polyhydroxy aldehydes or ketones is– **carbohydrate**	**AMU-1995**
Table sugar is which type of sugar– **sucrose**	**UP CPMT-2009**
Starch and cellulose are the compounds of many units of– **simple sugars**	**AIIMS-1996**
When a man starves, he first of all consumes to the stored– **glycogen**	**JIPMER-1996**
Glucose is– **Aldose hexose sugar**	**MP PMT-2013**
A complex polysaccharide produced from sucrose by the bacterium Leuconostoc mesenteroides is– **Dextran**	**BVP-2007**
Nature of Bond	
DNA polymerase links nucleotide by forming– **Phosphodiester bond**	**AIIMS-25.05.2019 Shift-I CG PMT-2005**
Two polynucleotide chains are held together by– **Hydrogen**	**Assam CEE-2014**
Lipase breaks the– **ester bonds**	**Uttarakhand PMT-2011**
In DNA helix, cytosine is paired with guanine by– **three hydrogen bonds**	**AP EAMCET-1998**
Concept of Metabolism and Living State	
Enzymes, vitamins and hormones can be classified into a single category of biological chemicals because of all of these– **help in regulating metabolism**	**NEET AIPMT-2005 AIIMS-2008**
The technique uses radioactive precursors for observing metabolic activities of macromolecules, is– **autoradiography**	**DUMET-2004**
Breaking down of organic compounds in the body and liberation of energy is– **a catabolic process**	**Rajasthan PMT-2001**

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Enzymes and Enzyme Action	
Disaccharide Lactose on hydrolysis forms galactose and glucose. The enzyme related is– **β-galactosidase**	**TS EAMCET 10.05.2023 Shift-I**
Enzymes are denaturated by– **heat**	**AP EAPCET-22.05.2023, Shift-II**
The term Enzyme was proposed by– **Wilhelm Kuhne**	**AP EAPCET-12.07.2022 Shift-I**
Invertase enzyme converts sucrose into– **glucose and fructose**	**AP EAPCET-11.07.2022 Shift-I**
Enzymes can react with acidic or basic substances due to their– **Amphoteric nature**	**MHT CET-2019**
Jacob and Monod named some enzymes as allosteric whose activity is regulated by– **end product**	**JIPMER-2014**
The term zymase was coined by– **Eduard Buchner**	**AIIMS-1999**
Biological catalyst is– **an enzyme**	**BVP-2001**
Enzymes with two sites are called– **allosteric enzyme**	**AIIMS-1995**
Curdling of milk in small intestine occurs due to the action of– **Chymotrypsin**	**AIIMS-2002**
An organic substance bound to an enzyme and essential for its activity is called– **coenzyme**	**AFMC-2008**
The enzyme which converts maltose into glucose is– **maltase**	**Punjab MET-2007**
The enzyme which converts corn starch into fructose rich corn syrup is– **glucoamylases, amylases and glucoisomerases**	**Punjab MET-2007**
Enzyme 'renin' is secreted by–**The cells of juxtaglomerular apparatus of kidney**	**CG PMT-2005**
Mo is a part of this enzyme– **Nitrogenase**	**BCECE-2015**
Substrate of an enzyme is– **The reactant of the reaction catalysed by the enzyme**	**AMU-2014**
The inorganic catalyst attached to enzymes is called– **Activator**	**Rajasthan PMT-2001**
Metabolic processes in living organisms are catalyzed by– **enzymes**	**Rajasthan PMT-2001**
Bromelain is an enzyme extracted from– **Pineapple**	**CMC Vellore-2011**
The enzyme peptidyl transferase of prokaryotes resides in– **50S ribosome**	**WB JEE-2015**
Hydrolytic enzymes which act at low pH are called as– **proteases**	**AIPMT-2002 Rajasthan PMT-2007**
Some of the enzymes, which are associated in converting fats into carbohydrates are present in– **glyoxysomes**	**Punjab MET-2010**
Factor Affecting Enzyme Activity	
The chylomicrons are broken down to fatty acids and glycerol by the action of the enzyme– **Lipoprotein lipase**	**AP EAPCET-22.05.2023, Shift-I**
The essential component of many co-enzymes are– **Vitamins**	**TS EAMCET-11.05.2023, Shift-II**
An example of non-competitive inhibition is– **Cyanide action on cytochrome oxidase**	**Kerala PMT-2009**
Allosteric inhibition of hexokinase by glucose 6-phosphate is a typical example of– **feedback allosteric inhibition**	**AIPMT-1996**
Nomenclature of Enzyme and its Classification	
Haem group associated with the enzyme catalase is an example of– **Prosthetic group**	**AP EAPCET-23.05.2023, Shift-II**
Enzymes are mainly classified into– **6 groups**	**AP EAPCET-12.07.2022 Shift-I**
Arginosuccinase is an example to– **Lyase**	**AP EAMCET-2013**
In the nomenclature of enzyme restriction endonuclease the Roman numeral indicates– **The order of discovery from source**	**MHT CET-2015**
Co-Factor	
FAD coenzyme is made from– **riboflavin**	**Haryana PMT-2001**
Enzyme ATPase is required for muscle contraction. The location of that enzyme is– **Myosin**	**Manipal-2014**
The enzyme that initiates protein degestion is – **Pepsin**	**CG PMT-2004**

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10.
CELL CYCLE AND CELL DIVISION

10.1 Cell Cycle

- Cell junction helps to stop substances from leaking across a tissue– **Tight junction**
- Amitosis usually occurs in– **Prokaryotic cells**
- Yeast cell divides once in approximately every– **90 minutes**
- Human cells in culture show a cycle to be completed in approximately– **24 hours**
- That phase of occupies the maximum part of cell cycle– **Interphase**
- ..... phases of the cell cycle is not a part of interphase– **M**
- A cell cycle includes– **Interphase and M phase**
- That stage of DNA replication takes place– **S-phase**
- The shorter and longer arms of a submetacentric chromosome are referred to as– **p-arm and q-arm respectively**
- The takes place in a coordinated manner to ensure correct division and formation of progeny cells– **DNA replication, Cell division, Cell growth**
- ..... and ..... are the characteristics of cells– **Growth, reproduction**
- The sequence of events in which a cell duplicates its genome, synthesises the other constituents of the cell and eventually divides into two daughter cells is called– **Cell cycle**
- Cell lineage "all cells are derived from pre-existing cells" is the famous generalisation of– **Rudolf Virchow**

10.2 Phases of cell Cycle

- Cells in G_0 phase– **Exit the cell cycle**
- Synthesis of histone proteins occurs in– **S-phase**
- During a study of cell cycle cannot be found– **Cells with chromosome number doubled in the S phase**
- Cell would normally proceed to mitosis without interruption– **Once it has entered the S phase**
- The cells that do not divide further, exit G_1 phase to enter an inactive stage called ..... of the cell cycle– **G_0 stage**
- Name the phase where actual DNA synthesis take place– **S phase**
- Nucleolus, golgi apparatus, ER reform in– **Telophase stage**
- The centrosome duplicates during the– **S - phase of cell cycle**
- Cell division cannot be stopped in which phase of cell cycle– **S - phase**
- Yeast cell can progress through the cell cycle in about– **90 min**
- Terminally differentiated cells remains at which stage– **G_0 - phase**
- Process does the M phase of cell cycle start with– **Karyokinesis**
- Most cytogenic activities occur during– **Interphase**
- G_1, S and G_2 are stages of– **Interphase**
- If the initial amount of DNA is denoted as 2C then the amount of DNA after S-phase will be– **4C**
- These animals does a haploid cell divide mitotically– **Male honey bees**
- The sequence of cell cycle is– **$G_1 \rightarrow S \rightarrow G_2 \rightarrow M$**
- Centriole replicates during– **Interphase**
- During which phase, proteins are synthesised in perparations for mitosis– **G_2-phase**
- G_0 state of cell denotes– **Exit of cell from cell cycle**
- Chromosomes are least condensed during– **Interphase**
- Phase represents the phase between two successive M phase– **Interphase**
- Interphase in also known as ..... stage and it takes about ..... time of cell cycle– **Resting, 95%**
- Pair of body cells lack cell division– **Neurons and heart cells**
- If the number of chromosomes in G_1 phase is 18. What will be the number of chromosomes in S-phase– **18**

10.3 M phase

- When cell has stalled DNA replication fork, which checkpoint should be predominantly activated– **G_2/M**
- A cell after M phase of cell cycle, the reason is– **Nucleocytoplasmic index decreases**
- A chromosome is minimum coiled, the stages– **Interphase**
- Best material for studying mitosis in laboratory is– **Root tip**
- Mitotic spindle is mainly composed of ..... proteins. **Tubulin**
- Mitotic apparatus is formed of– **Two asters with spindle fibres**
- ..... is the best stage to count the number and study the morphology of chromosomes– **Metaphase**

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- You are provided with root tips of onion in your class and are asked to count the chromosomes, then the stages would you prefer to look into– **Metaphase**
- During karyokinesis, the spindle fibres get attached to condensing chromosome at a highly differentiated region. This region is called– **Kinetochore**
- ..... equational divisions are necessary in a cell of onion root tip to form 128 cells– **7**
- In cell cycle, during ..... phase chromosomes are arranged in equatorial plate. **Metaphase**
- In onion root tip during metaphase stage of mitosis the number of kinetochores will be– **32**
- These events is not a part of karyokinesis– **Interphase**
- That happens to the chromosome during chromatin condensation– **It becomes detangled**
- Asters are made up of– **Microtubules**
- The shape of a kinetochore– **Disc - shaped**
- The constituents of the mitotic apparatus are– **Asters, Spindle fibers**
- That stage of cell cycle, chromosomes are most condensed– **Metaphase**
- Chromosome are visible with chromatids in– **Prophase**
- The related to telophase– **Formation of two daughter nuclei**
- Part of spindle left after chromosome have move to pole is– **Phragmoplast**
- Chromosomes can be counted best at the stage of– **Metaphase**
- Shape of chromosome can be best observed during– **Metaphase**
- Name the stage of mitosis in which chromosomes are arranged on the equator of spindle– **Metaphase**
- Karyokinesis differs from cytokinesis as it involves division of– **Nucleus**
- Exchange of segments between non-sister chromatids of homologous chromosomes is– **Crossing over**
- End of prophase is marked by– **Disappearance of ER, GB, nucleolus & nuclear envelope**
- A diploid living organism develops from zygote by repeated– **Mitosis**
- Centromere is required for– **Movement of chromosomes towards poles**
- A plant cell has 12 chromosomes at the end of mitosis. How many chromosomes would it have in the G_2 phase of its next cell cycle– **12**
- Mitotic anaphase differ from metaphase in possessing– **Same number of chromosomes and half number of chromatids**
- Major event that occurs during anaphase of mitosis which brings about equal distribution of chromosome is– **Splitting of centromeres**

10.4 Significance of Mitosis

- Characteristic feature during mitosis in somatic cells is not a– **Synapsis**
- That stage of mitosis, the two daughter chromatids separate from each other, migrate towards the opposite poles and are now referred to as chromosomes of the future daughter nuclei– **Anaphase**
- During anaphasic movements of chromosomes, ... of each chromosome is/are towards the pole and ..... of the chromosome trail(s) behind– **Centromere, arms**
- The separation of two chromatids of each chromosome at early anaphase is initiated by– **The force of repulsion between the divided kinetochores**
- The key event of anaphase of mitotic division is– **Centromeres split and chromatids separate**
- During the metaphase stage of mitosis, spindle fibres attach to chromosomes at– **Kinetochore**
- That phase of mitosis is essentially the reverse of prophase in terms of nuclear changes– **Telophase**
- A cell's division time is 1 minute. In 20 minutes, a culture tube (culture medium) is $1/8^{th}$ filled with cells. When the tube will be fully filled– **23 minutes**
- If a tissue at a given time has 1024 cells, how many cycles of mitosis had the original parental single cell undergone– **10**
- Syncytium formation occurs if– **Karyokinesis is not followed by cytokinesis**
- The role of mitosis is not merely to divide a cell into two daughter cells but to ensure genetic continuity from one cell generation to another cell generation. The mechanism ensuring genetic continuity is– **Formation of two cells with identical DNA**
- The growth of multicellular organisms is due to– **Mitosis**
- That type of cell division occurs in the cells of the upper layer of the epidermis, cells of the lining of the gut, and blood cells– **Mitosis**
- Mitosis results in the production of– **Genetically identical daughter cells, Two diploid daughter cells**
- Mitosis is also known as– **Equational division**

10.5 Meiosis

- The appearance of recombination nodules on homologous chromosomes during meiosis characterises– **Sites at which crossing over occurs**
- Crossing over takes place between which chromatids and in which stage of the cell cycle– **Non-sister chromatids of homologous chromosomes at Pachytene stage of prophase I**

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- The stage during which separation of the paired homologous chromosomes begins is– **Diplotene**
- During(s) phase of cell cycle, amount of DNA in a cell remains at 4C level if the initial amount is denoted as 2C– **Only G_2**
- The stages of meiosis involves division of centromere– **Anaphase II**
- That events of listed below is not observed during mitosis– **Crossing over**
- Meiosis leads to formation of– **Gamete**
- The chromosomes appear single, thin and thread like– **Leptotene**
- Zygotene of prophase-I is characterised by– **Synaptonemal complex**
- Crossing over in diploid organisms is responsible for– **Recombination of alleles**
- The members of a homologous pair of chromosomes– **are identical in size and appearance**
- A bivalent of meiosis I consists of– **Four chromatids and two centromeres**
- That stage of the homologous chromosomes separate due to repulsion, but are yet held by chiasmata– **Diplotene**
- Diplotene stage of prophase-I is characterised by– **Dissolution of synaptonemal complex, Formation of X-shaped structures called chiasmata**
- ..... stage is marked by appearance of recombination nodules and terminalisation of chiasmata respectively. **Pachytene and diakinesis**
- The separation of homologous chromosomes at anaphase I is known as- **Disjunction**
- Lampbrush chromosomes are seen in ..... typical stage. **Meiotic prophase**
- During meiosis I, chromosome number– **is reduced to half**
- During meiosis I in humans, one of the daughter cells receives– **A mixture of maternal and paternal chromosomes**
- The number of chromosomes is reduced to half during– **Meiosis I**
- Splitting of centromere and hence separation of chromatids occur during– **Anaphase of mitosis, Anaphase of meiosis II**
- If gametes are produced after reduction division, they are termed as– **Meiogametes**
- The phase of meiosis there are two cells, each with separated sister chromatids that have been moved to opposite spindle poles– **Anaphase II**
- An anther has 1200 pollen grains. How many PMCs must have been there to produce them– **300**
- Meiosis does not occur in– **Bacteria, Cyanobacteria**
- In animals meiotic division occurs during gamete formation. This gametic meiosis results in– **Diplontic life cycle**
- Crossing over occurs between– **Paired homologous chromosomes**
- Name of the stage of meiosis where homologous chromosomes start pairing– **Zygotene**
- Name the stage of meiosis where crossing over occurs between non-sister chromatids of homologous chromosomes– **Pachytene**
- Prophase-I is subdivided into five phases based on– **Chromosomal behaviour**
- The chromosomes becomes gradually visible with compaction of chromosomes during which meiotic stage– **Leptotene**
- Synaptonemal complex is formed during– **Zygotene**
- Longest phase of meiosis– **Prophase - I**
- During meiosis-I, the bivalent chromosomes clearly appear as tetrad during– **Pachytene**
- Crossing over occurs at– **Four strand stage**
- In meiosis, the daughter cells are not similar to that of parent because of– **Crossing over**
- The number of chromosomes becomes half in– **Anaphase-I**
- Stage of first meiotic division, two sister chromatids are formed– **Pachytene**
- That stages, the chromosomes are single, thin and long thread like– **Leptotene**
- Recombination is involved in the process of– **Crossing over**
- Homologous chromosome separated during– **Anaphase I**
- Crossing over is found in– **Pachytene**
- Repulsion of homologous chromosome began during– **Diplotene**
- Stages in proper sequence of prophase I are– **Leptotene, Zygotene, Pachytene, Diplotene and Diakinesis**
- When does pairing/synapsis of homologous chromosomes (bivalent formation) occur in meiosis– **Zygotene**
- Terminalisation occurs during– **Diakinesis**
- Microtubules from opposite poles of spindle get attached to kinetochores of sister chromatids during– **Metaphase II**
- The chromosomal association process in zygotene is called– **Synapsis**
- During meiosis I, the number of chromosomes is– **Halved**
- Two homologous chromosomes, each with two chromatids- **Tetrad**
- At what stage, does the number of chromosomes become half– **Anaphase I**

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- The four daughter cells produced at the end of meiosis are– **Genetically dissimilar**
- When synapsis is complete all along the chromosomes, the cell is said to have entered a stage called– **Pachytene**
- Meiotic cell division is also termed as reduction division because of– **Number of chromosomes becomes halved**
- That stage, synaptonemal complex dissolves, chromatids become clear and bivalents are called tetrads– **Diplotene**
- After meiosis-I, the two chromatids of a chromosome are– **Genetically different**
- Recombination between homologous chromosomes is completed by the end of– **Pachytene**
- Synapsis occurs between– **Two homologous chromosomes**
- Shape of chiasmata is– **X-shaped**
- Enzyme responsible for crossing over in pachytene stage of meiosis-I is– **Recombinase**

10.6 Significance of Meiosis

- Meiosis in diploid organisms results in– **Production of gametes, Introduction of variation**
- At which stage of meiosis does the genetic constitution of gametes is finally decided– **Anaphase II**
- Meiosis occurs in organisms during– **Sexual reproduction**
- During anaphase I of meiosis– **Homologous chromosomes separate**
- Mitosis is characterised by– **Equal division**
- A bivalent of meiosis I consists of– **Four chromatids and two centromeres**
- Cells ..... are not dividing are likely to be at– **G_0**
- Best material to study meiosis is– **Young anther**
- Genetic recombination is due to– **Fertilization and meiosis**
- Meiosis is evolutionary significant because it results in– **Recombinations**
- The significance of meiosis lies in– **Reduction division**
- Four daughter cells formed after meiosis are– **Genetically different**
- The reason behind the production of genetic variability by meiosis is– **Chromosome number reduced to half**
- Two events restore the normal number of chromosomes in life cycle– **Meiosis and fertilisation**

10.7 Miscellaneous

- Meiosis result in diploid organisms– **Production of gametes, Introduction of variation**
- Stage of meiosis, does the genetic constitution of gametes is finally decided– **Anaphase-I**
- Meiosis occurs in organisms during– **Sexual reproduction**
- During Anaphase-I of meiosis– **Homologous chromosomes separate**
- Mitosis is characterised by– **Equal division**
- A bivalent of meiosis-I consists of– **Four chromatids and two centromeres**
- Cells which are not dividing are likely to be at– **G_0**
- Events listed below is not observed during mitosis– **Crossing over**
- Identify the wrong statement about meiosis– **Two cycle of DNA replication occurs**
- G_1 phase is– **DNA in the cell does not replicate**
- Never occurs during mitotic cell division– **Pairing of homologous chromosomes**
- The appearance of recombination nodules on homologous chromosomes during meiosis characterizes– **Sites at which crossing over occurs**
- Stages of meiosis involves division of centromere– **Anaphase-II**
- The fruit fly has 8 chromosomes (2n) in each cell. During interphase of Mitosis if the number of chromosomes at G_1 - phase is 8, what would be the number of chromosomes after S phase– **8**
- That stage of meiotic prophase shows terminalisation of chiasmata as its distinctive feature– **Diakinesis**
- The centriole undergoes duplication during– **S-phase**
- Regard to G_1 phase (Gap 1) of interphase– **Cell is metabolically active, grows but does not replicate its DNA**
- Dissolution of the synaptonemal complex occurs during– **Diplotene**
- Some dividing cells exit the cell cycle and enter vegetative inactive stage. This is called quiescent stage (G_0). This process occurs at the end of– **M-phase**
- In a mitotic cycle, the correct sequence of phases is– **$G_1 \rightarrow S \rightarrow G_2 \rightarrow M$**
- Attachment of spindle fibers to kinetochores of chromosomes becomes evident in– **Metaphase**
- During Meiosis-I, in which stage synapsis takes place– **Zygotene**
- The correct sequence of phases of cell cycle is– **$G_1 \rightarrow S \rightarrow G_2 \rightarrow M$**
- Cell in G_0-phase– **Exit the cell cycle**
- The stage during which separation of the paired homologous chromosomes begins is– **Diplotene**

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EXAM POINT

Cell Cycle	
Polyploidy can be induced by the application of– **Colchicine**	**JIPMER- 2012, 2005 BVP-2009 CMC Vellore-2008 BHU PMT (Mains)-2006 AMU-2006 / BVP-2006, 2001 JCECE-2005 Haryana PMT-2007, 2005 Punjab MET-2004 BHU PMT-2003 JIPMER-2001 / AIIMS-2000 Manipal-2000**
Attachment of spindle fibers to kinetochores of chromosomes becomes evident in– **Metaphase**	**NEET-2020 Phase-II NEET-2016 Phase-I NEET (Karnataka)-2013 JIPMER-2012 AIPMT (Mains)-2011**
A bacterium divides after every 35 min if a culture containing 10^5 cells per mL is grown, then cell concentration per mL after 175 min will be– **32×10^5**	**UP CPMT-2012 BHU PMT (Screening)-2008 CG PMT-2008 / BVP-2007 BHU PMT-2004**
Meiocytes are– **Gamete mother cells**	**AP EAMCET-03.09.2021 Shift-II**
Amitosis is the usual process of cell division– **Prokaryotic cells**	**HP CET-2018 BCECE-2011**
Cytokinin helps in– **Cell elongation, Cell division and Apical dominance**	**UP CPMT-2010**
Anticlinal or radial division mean division in– **At right angle to outer wall**	**AFMC -2011**
Chromosome number is– **Fixed for a species**	**CG PMT-2007**
Bringing the chromosomes on equator of spindle apparatus is known as – **Congression**	**AMU-2007**
The chemical used in artificial polyploidy– **Acenaphthene**	**AP EAMCET-2003**
Best material for demonstrating streaming movements of protoplasm within living cells is– **Staminal hair of tradescantia**	**Haryana PMT-2007**
Meiosis in Dryopteris takes place during– **Spore formation**	**AMU-2006**
Yeast cell can progress through the cell cycle in about– **90 min**	**AMU-2012**
The anaphase promoting complex is activated by– **M cdk cyclin**	**Manipal-2010**
If a cell has twice as much DNA as in normal functional cell, it means that the cell is preparing to – **Divide**	**Karnataka CET-2005**
Guardian angel of genome is– **P^{53} Protein**	**AP EAMCET-2015**
Chromosome was discovered by– **Fleming**	**MGIMS Wardha-2012**
Phases of Cell Cycle	
DNA replication takes place during– **S - phase**	**AP EAMCET-25.09.2020 Shift-I JIPMER-2016, 2012, 2007, 2003 J&K CET-2015 BVP-2005, 2012, VMMC-2011 Karnataka CET-2010 WB JEE-2010 Uttarakhand PMT-2009 Rajasthan PMT-2008, 1998 BCECE-2007 MGIMS Wardha-2005 Haryana PMT-2004 Manipal-2003 UP CPMT-2010, 2005, 2001 Punjab MET-1999**

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Spindle fibers are made up of– **Tubulin protein and RNA**	**VMMC-2012 / WB JEE-2011 Rajasthan PMT-2008, 2007, 2003 JIPMER-2009, 2002 JCECE-2006 BHU PMT (Screening)-2006 AIPMT-2002 / Manipal-2002 AMU-2011 / BCECE-2010 UP CPMT-2008**
In 'S' phase of the cell cycle– **Amount of DNA doubles in each cell**	**AP EAMCET-24.09.2020 Shift-II AIPMT-2014 / AIIMS-2013 CG PMT-2004**
The stage of cell cycle when cell has undergone differentiation is– **G_0**	**BVP-2014, 2012 DUMET-2007 MGIMS Wardha-2006 AMU-2003**
During cell cycle, RNA and non-histone proteins are synthesized in– **G_2 – phase**	**CMC Vellore-2010 Punjab MET-2009, 2008 Rajasthan PMT-2009 UP CPMT-2009 / AMU-2009**
The sequence of different phases of cell cycle is– **$G_1 – S – G_2 – M$**	**NEET-2020 Phase-II NEET-2019 AMU-2014 / WB JEE-2012 AP EAMCET-2010 WB JEE-2008 Rajasthan PMT-2003 UPCPMT-2002 / AIIMS-1999**
The dissolution of synaptonemal complex occurs during– **Dilplotene**	**RE-NEET (UG)-06.06.2023 (Manipur)**
The appearance of recombination nodules on homologous chromosomes during meiosis characterizes– **Sites at which crossing over occurs**	**NEET-2022**
Bivalent or Tetrad formation is a characteristic feature observed during– **Synaptonemal complex in zygotene stage**	**NEET (Re-Exam)-04.09.2022**
'G_0' stage of the cell cycle is characterized by– **Metabolically active**	**AP EAMCET-03.09.2021 Shift-I**
On imbibitions, pea seeds swell more compared to that of wheat seeds because they contain– **Protein**	**AP EAMCET-24.09.2020 Shift-II**
Some dividing cells exit the cell cycle and enter vegetative inactive stage. This is called quiescent stage (G_0). This process occurs at the end of– **M phase**	**NEET-2020 Phase-I**
In human beings, during oogenesis, Meiosis-I into– **A haploid large-sized secondary oocyte and a haploid smaller polar body**	**MHT CET-06.10.2020 Shift-I**
Cells in G_0-phase of cell cycle– **Exit cell cycle**	**NEET-2019 WB JEE-2009**
Interphase divides into– **G_1, S, G_2**	**AIIMS-26.05.2018 Shift-I Karnataka CET-2000**
The size of the chromosome is measured during– **Metaphase**	**SRM JEEE -2017**
DNA polymerase is synthesised in– **G_1-phase**	**UP CPMT-2004 MGIMS Wardha-2004**
Diagrammatic representation of all chromosomes at metaphase is called– **Ideogram**	**BVP-2010**
Small disc–shaped structures at the surface of the centromeres that appear during metaphase are– **Kinetochores**	**AFMC -2009**
The point at which crossing over occurs is called as– **Chiasmata**	**BHU PMT-2001**
Chromosomes are visible with chromatids at this phase of mitosis– **Prophase**	**J&K CET-2008**
The phase of cell cycle during which DNA + polymerase is functionally active is– **S**	**Karnataka CET-2002**
The stage during which, cell decides to get specialized– **G_1-phase**	**DUMET-2008 AMU-1995**

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Meiosis can be observed in– **Spore mother cells**	**HP CET-2011**
In man the meiotic cell division takes place in– **Gonads**	**JIPMER-1999**
Chiasmata are most appropriately observed in meiosis during– **Diplotene**	**MGIMS Wardha-2004**
The two chromatids of a metaphase chromosome represent– **Replicated chromosomes to be separated at anaphase**	**Karnataka CET-2003**
When yeast ferments glucose the products are– **ethanol and carbon dioxide**	**JCECE-2003** **Rajasthan PMT-2002** **JIPMER-2000**
In the somatic cell cycle– **DNA replication takes place in S-phase**	**Manipal-2014, 2007** **AIPMT-2004**
Replication of centriole occurs during– **Interphase**	**BHU-PMT (Screening)-2008** **BHU PMT-2004**
Synaptonemal complex is a ribonucleo protein structure reported by Moses 1956. It is visible from– **Zygotene through pachytene**	**CMC Vellore-2007**
The stage at which cleavage or cytokinesis begins in animal cell is– **Anaphase**	**CMC Ludhiana-2007**
The largest phase of meiosis-I is– **Prophase–I**	**BHU-PMT (Screening)-2008**
The proteins involved in the movement of chromosomes towards the poles during cell division are– **Tubulin**	**AP EAMCET-2008**
Most cytogenic activity occur during– **Interphase**	**UP CPMT-2005**
Interval between two successive cell division, better known as resting phase, but is actually a period of great biosynthetic activity is called as– **Interphase**	**UP CPMT-2014**
The phragmoplast is organised at the– **End of anaphase**	**UP CPMT-2011**
A cell at telophase stage is observed by a student in a plant brought from the field. He tells his teacher that this cell is not like other cells at telophase stage. There is no formation of cell plate and thus the cell is containing more number of chromosomes as compared to other dividing cells. This would result in– **Polyploidy**	**NEET-2016 Phase-I**
In S–phase, DNA is replicated in a medium containing radioactive thymidine, radioactivity will be observed in– **Euchromatin and Heterochromatin**	**AIPMT-1998**
Colchicine is an inhibitory chemical, which– **prevents the spindle formation in mitosis**	**VMMC-2002**
During the cell cycle, 2 molecules of DNA are present in a chromosome in the– **End of S phase**	**AIIMS-2001**
Barr Body is found in the cytoplasm during– **Interphase in cell of female mammal**	**AIIMS-2001**
During cell division a cell plate is produced during– **Cytokinesis**	**UP CPMT-2007** **J&K CET-2000**
Centromere is required for– **movement of chromosomes towards poles**	**Uttarakhand PMT-2010**
Interphase nucleus is enclosed by– **porous double nuclear membrane**	**Punjab MET-2007**
The drug colchicine has inhibitory effect on cell cycle in– **Metaphase**	**Punjab MET-2011**
L-shaped chromosomes are also called– **Sub-metacentric**	**Rajasthan PMT-2008**
Phase just after G_1 – phase– **S-phase**	**JCECE-2014**
Replication of centriole occurs during– **Interphase**	**BVP-2007**

Cytokinesis

The process of cytokinesis shows the division of– **Cytoplasm**	**HP CET-2012** **VMMC-2004** **Punjab MET-1999**
During mitosis nuclear membrane disappears at– **Late prophase**	**Tripura JEE-2017** **MGIMS Wardha-2011** **AIPMT (Screening)-2010**
Cytokinesis begins at the stage of– **Anaphase**	**CG PMT-2010**
Highest number of antibiotics are produced by– **Streptomyces**	**BVP-2014**

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Purified antibiotic penicillin of Penicillium notatum was discovered by– **Alexander Fleming**	**Punjab MET-2008 J&K CET-2001**
Significance of Mitosis	
During which process the number of chromosomes gets no change– **Mitosis**	**BVP-2008 Uttarakhand PMT-2007 DUMET-2005 UP CPMT-2003**
Offsets are produced by– **Mitotic divisions**	**NEET-2018**
Post mitotic gap phase is characterised by all, except– **Synthesis of histone proteins**	**JIPMER-2017**
In mitotic cell division, the division of centromere and the division of chromatid occurs between– **Anaphase and metaphase**	**WB JEE-2006**
Mitosis occurs in– **Heart cells, skin cells and kidney cells**	**Rajasthan PMT-2004**
In mitosis, duplication of chromosomes occurs during– **Interphase**	**BHU PMT-2002**
Anastral mitosis is the characteristic of– **Higher plants**	**JIPMER-2000, 1997**
The post mitotic phase of the cell in which active synthesis of RNA and proteins takes place is– **G_1-phase**	**Karnataka CET-2003**
Germ cells in gonads are produced by– **Meiosis**	**CG PMT-2011**
Centromere is a part of– **Chromosome**	**Haryana PMT-2001**
Meiosis	
The longest phase of meiosis -I is– **Prophase-I**	**BCECE-2014 / WB JEE-2011 JCECE-2005 Punjab MET-2004 Haryana PMT-2002 UP CPMT-2001 Manipal-2000 AP EAMCET-1998**
The term Meiosis was given by– **Farmer and Moore**	**BVP-2005 Haryana PMT-2004, 2000 JIPMER-2003 / Manipal-2003 VMMC-2002**
Pairing of homologous chromosomes takes place during– **Zygotene**	**Haryana PMT-2005 CG PMT-2004 BHU PMT-2003 AP EAMCET-2000**
Meiosis can be observed in– **Microspore mother cells**	**BCECE-2006 / VMMC-2005 AMU-2004 / BVP-2003**
The reason for the genetic variation in the population of organisms– **Meiosis**	**AP EAPCET-23.05.2023, Shift-II**
Doubling of the number of chromosomes can be achieved by disrupting mitotic cell division soon after– **Metaphase**	**RE-NEET (UG)-06.06.2023 (Manipur)**
The importance of meiosis lies in– **Maintaining the number of chromosomes**	**WB JEE-2006**
In which type of division is I^{st} reductional and II^{nd} equational– **Meiosis**	**Haryana PMT-2005 JIPMER-2005 BHU PMT-2003**
Synapsis occur between– **Two homologous chromosomes**	**Manipal-2012**
The four daughter cells derived from a single meiosis differ from each other due to– **crossing over as well as independent assortment of chromosomes**	**CG PMT-2007**
Tapetal cells are characterized by– **Endomitosis as well as endopolyploidy**	**Haryana PMT-2007**
The second meiotic division leads to– **Separation of chromatids and centromere**	**Haryana PMT-2004 Manipal-2003**
Crossing over takes place at– **Four strand stage**	**Punjab MET-2009 Rajasthan PMT-2009 Haryana PMT-2003**
The function of the enzyme 'recombinase' during meiosis is– **Crossing over between non-sister chromatids**	**Karnataka CET-2016**

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The behaviour of the chromosomes was parallel to the behaviour of genes during meiosis was noted by– **Sutton and Boveri**	**Kerala PMT-2012**
The complex formed by a pair of synapsed homologous chromosomes is called– **Bivalent**	**NEET-2013**
Meiosis occurs in– **Germ cells**	**J&K CET-2001**
Crossing over occurs during– **Pachytene**	**BVP-2009**
Chiasma shows the sites of– **Crossing over**	**VMMC-2004**
The formation of multivalents at meiosis in diploid organism is due to– **Reciprocal translocation**	**Punjab MET-2010**

Phase of Meiosis and its Significance

When synapsis is complete all along the chromosome, the cell is said to have entered a stage called– **Pachytene**	**CMC Vellore-2012 CMC Ludhiana-2009 JCECE-2009 / AFMC-2008 AIIMS-2005**
Crossing over occurs during– **Pachytene**	**VMMC-2009 BHU PMT (Screening)-2009 Uttarakhand PMT-2009 MGIMS Wardha-2008**
The complex formed by a pair of synapsed homologous chromosomes is called– **Bivalent**	**Karnataka CET-20.05.2023**
In meiosis, crossing over and exchange of genetic material between homologous chromosomes are catalyzed by the enzyme– **Recombinase**	**NEET (Re-Exam)-04.09.2022**
After meiosis I, the resultant daughter cells have– **Twice the amount of DNA in comparison to haploid gamete**	**NEET (Odisha)-2019**
The chromosomes align at the equator and the microtubules from opposite poles of the spindle get attached to the kinetochores of sister chromatids are in– **Metaphase-II**	**TS EAMCET-09.05.2019 Shift-I**
In meiosis two homologous chromosomes form bivalents by– **Synaptonemal complex**	**Tripura JEE-2019**
Non-disjunction in meiosis results in– **Trisomy**	**JIPMER-2018**
In biogas plant, the role of acidogenic bacteria is to– **Convert monomers to organic acids**	**MHT CET-2018**
The stage during which separation of the paired homologous chromosomes begins is– **Diplotene**	**NEET-2018**
Synapsis is characteristic feature of– **Zygotene**	**VMMC-2011**
Formation of chiasmata is the characteristic feature of– **Diplotene**	**Himachal Pradesh PMT-2011 UP CPMT-2010, 2004**
Meiosis-II performs– **Separation of chromatids**	**VMMC-2013**
Stages in proper sequence of prophase-I are– **Leptotene, zygotene, pachytene, diplotene and diakinesis**	**MGIMS Wardha-2007**
The exchange of segments of non-sister chromatids between chromosomes of a homologous pair is termed as– **Crossing over**	**DUMET-2010**
The enzyme involved in the crossing over between two homologous chromosome is– **Recombinase**	**J&K CET-2014**
The centromere or primary constriction of the chromosome contains rings of proteins that are intimately associated with a spindle fibre. These rings are called– **Kinetochores**	**BHU PMT (Screening)-2010**
During meiosis-I, the number of chromosomes is– **Halved**	**J&K CET-2015**
The chromosome becomes gradually visible with compaction of chromosomes during the meiotic stage– **Leptotene**	**AMU-2012**
Chiasma shows the sites of– **Crossing over**	**HP CET-2012**

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Visible expression of the genetic phenomenon of crossing over is called– **Chiasmata**	**Karnataka CET-2012**
Biogas production is carried out by– **Methanogens**	**AFMC-2010**
In meiosis crossing over is initiated at– **Pachytene**	**NEET-2016 Phase-I**
Independent assortment of gene occurs due to the orientation of chromosomes at– **Metaphase-I of meiosis**	**JIPMER-2015**
During gamete formation, the enzyme recombinase participates during– **Prophase-I**	**AIPMT (Screening)-2012**
Activity of ligase enzyme is found in– **Pachytene**	**AP EAMCET-2010**
When paternal and maternal chromosomes change their materials with each other in cell division this event is called– **Crossing over**	**JIPMER-2003**
Variation in character are brought about by– **mutations and crossing over during meiosis**	**J&K CET-2002**
Recombination of genes occur at– **Prophase-I in meiosis**	**J&K CET-2002**
The exchange of chromosomal segment between two non-homologous chromosomes called as– **Translocation**	**Assam CEE-2014**
The pairing of homologous chromosomes in meiosis is known as– **Synapsis**	**AIIMS-1994**
During meiosis, crossing over occurs between– **Non-sister chromatids of homologous chromosome**	**BVP-2004**
The second meotic division leads to–**Separation of chromatids and centromere**	**BVP-2005** **DUMET-2003**
The non-sister chromatids twist around and exchange segments with each other during– **Pachytene**	**Kerala PMT-2009**
During the meiotic division, the– **Homologous chromosomes are separated**	**JIPMER-2010** **BHU PMT (Screening)-2005**
Genetic content of a cell reduces to half during– **Meiotic telophase**	**KVPY SB & SX-2013**
Meiosis I and Meiosis II are characterised by the separation of– **Homologous chromosome; sister chromatids**	**KVPY (SA)-2013**
During meiosis there is– **One round of DNA replication and two divisions**	**KVPY (SA)-2011**
In human females, meiosis-II is not completed until– **Fertilization**	**AIPMT (Re-Exam)-2015**
Crossing over occurs– **Four strand stage**	**UP CPMT-2009**
When synapsis is complete all along the chromosome, the cell is said to have entered a stage called– **Pachytene**	**CMC Vellore-2012** **AFMC-2008** **AIIMS-2005**
Synaptonemal complex is a structure of– **Chromosomal pairing**	**BCECE-2015**
A bivalent of meiosis I consists of– **Four chromatids and two centromeres**	**Karnataka CET-2013**
Synapsis is found in– **Zygotene phase**	**Rajasthan PMT-1997**
Exchange of paternal and maternal chromosomes material during cell division is called– **Crossing over**	**J&K CET-2013**
Exchange of genetic material two homologous chromosomes occurs in– **Pachytene**	**TS EAMCET-15.05.2016**
Chiasmatas appear in– **Diplotene phase**	**Rajasthan PMT-1995**
The frequency of crossing - over occurring between two genes located on the same chromosome depends on– **Distance between two genes**	**WB JEE-2014**
A structure called Synaptonemal complex, which is considered to be physical structure which is associated with synapsis of homologous chromosomes was discovered by– **Moses**	**BVP-2006**
Gobar gas contains mainly– **$CH_4 + CO_2$**	**Haryana PMT-2000**

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11. PHOTOSYNTHESIS IN HIGHER PLANTS

11.1 What do we know

- The experiments which showed that carbon dioxide is essential for photosynthesis– **Half-leaf experiment**
- Green plants carry out photosynthesis, is– **Physico-chemical process**
- Raw materials required for photosynthesis are– **Water, light and CO_2**
- A variegated.....was done to prove that Photosynthesis occurs only in green parts of the leaves- **Leaf experiment**
- Products of photosynthesis are– **Carbohydrates and oxygen**
- Carbon dioxide is necessary for photosynthesis. The chemical used to remove this gas most effectively from entering a control apparatus is– **Potassium hydroxide solution**

11.2 Early Experiments

- Concept of gaseous exchange during photosynthesis was established by the experiment using– **Bell jar**
- _____ carries out photosynthesis without evolution of oxygen– **True photosynthetic bacteria**
- A first action spectrum of photosynthesis described by T.W. Engelmann resembles rough the absorption spectra of– **Chlorophyll a and b**
- Oxygen was discovered by– **Priestly**
- Green parts of plants releases O_2. This was showed by– **Ingenhousz**
- Plant is used by Engelmann while experiment for action spectrum– **Cladophora**
- Joseph Priestly uses, the plant is– **Mint**
- The hypothesis, "Plants restore to the air whatever breathing animals and burning candles remove" was given by– **Joseph Priestley**
- Action spectrum experiment was conducted on– **Cladophora**
- Indicated by first that water is hydrogen donor in photosynthesis– **Van Niel**
- In plants, glucose is stored as– **Starch**
- Role of light in plants– **Necessary for photosynthesis, Controls growth & movement**
- Cornelius van Niel's experiment was on– **Purple and green sulphur bacteria**
- Revealed the essential role of air in the growth of green plants– **Priestley**
- Oxygen which is liberated during photosynthesis comes from– **Water**
- The scientist, proved that bacteria use H_2S gas and CO_2 to synthesize carbohydrate is– **Van Niel**
- During photosynthesis, the oxygen in glucose comes from– **CO_2**
- The specific function of light energy in the process of photosynthesis is to– **Activate chlorophyll**
- In purple and green sulphur bacteria, the hydrogen donor is– **H_2S**
- Beside water and light, the most essential raw material for food formation is– **CO_2**
- Chlorophyll a occurs in– **All oxygen liberating autotrophs**
- Cytochromes are– **Electron acceptors**
- In T.W Engelmann's experiment, bacteria were used to detect the sites of– **O_2 evolution**
- Melvin Calvin studied– **Algal photosynthesis**

11.3 Where does Photosynthesis Take place

- The specialised epidermal cells present in the vicinity of guard cells are called– **Subsidiary cells**
- In photosynthesis, the light-independent reactions take place at– **Stromal matrix**
- Usually chloroplasts align themselves along the walls of ..... to get the optimum quantity of the incident light– **Mesophyll cells**
- Photosynthesis does take place in– **All green parts of the plants**
- Photosynthesis includes– **Light and dark phase**
- The dark reaction in photosynthesis is called so because– **It does not require light**
- Stroma in the chloroplasts of higher plant contains– **Light-independent reaction enzymes**
- Site of photolysis of water– **Lumen of thylakoid sacs**
- Chlorophyll is present– **In the grana of chloroplasts**
- The sugar synthesis caused by the enzymatic reactions takes place in– **Stroma**

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- Stacks of thylakoids in plastids of higher plants is called - **Grana**
- Ground substance of chloroplast is– **Stroma**
- The site for light reaction is– **Grana**

11.4 How Many Pigments are Involved in Photosynthesis

- Action spectrum for photosynthesis was first given by Engelmann by using– **Green algae and aerobic bacteria**
- Photosynthesis of water means– **Oxidation of water**
- In photosynthesis, the light energy is utilized in– **Converting ADP into ATP**
- The colour of xanthophylls is– **Yellow**
- Most of the photosynthesis takes place in the ____ and _____ regions of the spectrum– **Blue and Red**
- Photosynthetic pigments such as chl a, chl b, xanthophyll and carotene can be separated by the techniques – **Paper chromatography**
- Chlorophyll a appears ..... in colour and chlorophyll b appears ..... in colour in the chromatogram. **Bluish green, yellowish green**
- Visible part of electromagnetic spectrum consists of radiations having a wavelength in the range of– **390-760 nm**
- Red regions of VIBGYOR fall in the range of wavelength– **660 - 760 nm**
- Absorption spectrum of chl a shows maximum absorption in ..... and ..... regions of light– **Blue, Red**
- Accessory photosynthetic pigments in most green plants are– **Chlorophyll b, Carotenoids and xanthophylls**
- Photosynthetic pigments of cyanobacteria (blue green algae) include– **Chlorophyll a, Carotenes, Phycobilins**
- ..... bacteria oxidize various inorganic substances such as nitrates, nitrites and ammonia and use the released energy for ATP production. They play an important role in recycling of nutrients (N, P, Fe, S etc.)– **Chemosynthetic autotrophic**
- Main function of carotenes is to prevent– **Photo-oxidation**
- Pigment shows as bright or blue green in the chromatogram– **Chlorophyll a**
- Pigment is present universally in all green plants – **Chlorophyll-a**
- Technique used to separate the leaf pigments of any green plant is– **Paper chromatography**
- ..... is not a photosynthetic pigment.– **Anthocyanin**
- Pigment system is concerned with– **Photolysis of water**
- Most effective wavelength of light for photosynthesis is– **Red**
- Correct about chlorophyll a and b in leaves of higher plants– **Chlorophyll a is more than chlorophyll b**
- Chlorophyll absorbs– **Blue and red light**
- Set of pigments are involved in photosynthesis of green plant– **Chlorophyll, carotene and xanthophylls**

11.5 What is Light Reaction?

- Dark reaction of photosynthesis is driven by the _____ **Product of light reaction**
- Light reaction of photosynthesis include– **Light absorption and photolysis, Oxygen release and Formation of ATP and NADPH**
- First step of light phase of photosynthesis is– **Excitation of chlorophyll by light**
- Photosynthesis pigment has maximum absorption peak in red range of visible light– **Chlorophyll a**
- The connecting link between light reaction and dark reaction– **ATP and NADPH**
- The membrane system in chloroplast is responsible for– **Trapping the light energy, Synthesis of ATP and Synthesis of NADPH + H^+**
- The function of accessory pigments is– **The absorb light, They protect "chlorophyll a" from photo-oxidation and They transfer the energy to "chlorophyll a"**
- Photosynthesis is a– **Physicochemical oxidation reduction**
- ..... is not a product of light reaction of photosynthesis– **NADH**
- Light harvesting complexes (LHC) are made up of hundreds of pigment molecules bound to proteins. In LHC, reaction centre is formed by– **A single chlorophyll a molecule**
- Bacterial photosynthesis includes– **PS I**
- Sensitive to longer wavelengths of light is– **PS I**
- Ferredoxin is a constituent of– **PS-I**
- In PS II, the reaction centre chlorophyll a has an absorption peak at– **680 nm**
- In PS I, the reaction centre chlorophyll a has an absorption peak at– **700 nm**
- Light-harvesting systems are there in light reaction – **Two**
- Chlorophyll 'a' molecules form reaction centre– **One**
- Occurs during the light reaction of photosynthesis– **Water splits to form $1H^+$ & O_2**

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11.6 The Electron Transport

- All the carriers are placed in a sequence on a redox potential scale in– **Z-Scheme of photosynthesis**
- In the photosystem II, reaction centre is formed by _____ molecule of chlorophyll a– **One**
- Photosystem I– **Is involved in circulation of electrons, in between H_2O and $NADP^+$**
- PS-I and PS-II differ to each other in– **Reaction centre, location on thylakoid membrane and Redox behaviour**
- Entry or exit of ions via symplast is–**Active process**
- Electron transport chain (ETC) is a set of ..... electron carriers present in a specific sequence along ..... mitochondrial membrane– **Seven, Inner**
- In the electron transport system present in the inner mitochondrial membrane complexes I and IV are respectively– **NADH dehydrogenase and cytochrome C oxidase complex**
- Oxidation of one NADH and one $FADH_2$ give rise to ..... and ..... ATP molecules respectively– **3, 2**
- Last e^- acceptor during ETS is– **O_2**
- PGA as the first CO_2 fixation product was discovered in photosynthesis of– **Alga**
- In Kranz anatomy, the cells have thick walls, no intercellular spaces and large number of chloroplasts is known as- **Bundle sheath**
- Water splitting complex is present in– **PS II and located on inner side of the thylakoid membrane**
- The products of light reaction are– **ATP, NADPH, and O_2**
- Directly transfers electrons to NADP during light reaction– **PS I**
- Element essential for photolysis of water is– **Chlorine**
- Electrons lost by PS II are regained from– **H_2O**
- The name of the scheme given to the transport of electrons is called as– **Z scheme**
- Constituents of pigment system I are located on– **Outer surface of granal and stromal thylakoids**
- Phosphorylation is associated with the synthesis of– **ATP**
- In ATP synthesis through chemiosmosis, the first acceptor of electrons from an excited chlorophyll molecule of photosystem II is– **Plastoquinone**
- The stroma lamellae membrane lacks– **PS II, NADP reductase**
- The electron transport system occurs in– **Thylakoid membrane**
- In non-cyclic photophosphorylation, the electrons passed down through the electron transport system are obtained from– **Water**
- ..... is the only product in cyclic photophosphorylation. **ATP**
- Cyclic photophosphorylation produces– **Energy only**
- The most common H^+ acceptor– **NAD^+ and $NADP^+$**
- Cyclic photophosphorylation occurs when the wavelength of light is– **680 nm**
- Z-scheme in thylakoid membrane is concerned with– **Electron transfer**
- The process in which light energy is converted into chemical energy through production of ATP- **Photophosphorylation**
- The important role of PS-II in photosynthesis is– **To cause photolysis of water**
- The high-energy chemical intermediates of photochemical reaction are– **ATP and NADPH**
- Pigment system-I is concerned with– **Cyclic photophosphorylation,**
- Photolysis of each water molecule in light reaction will yield– **2 electrons and 2 protons**
- Excitement of an electron of chlorophyll by photon of light is the first step in - **Photosynthesis**
- ..... one occurs both during cyclic and non-cyclic modes of photophosphorylation– **Formation of ATP**
- Synthesis of ADP = Pi → ATP in grana/photosynthesis is – **Photophosphorylation**

11.7 Where are ATP and NADPH used?

- In the C_3 plants, CO_2 acceptor is– **5C, ketosugar (RuBP)**
- There are 12 molecules of CO_2 to be fixed in photosynthesis, then how many turns of Calvin cycle and how many molecules of glucose will be synthesized respectively– **12 turns, 2 molecules**
- 12 molecules of H_2O are sufficient to– **Produce one glucose molecule in C_3 plants**
- The regeneration of RuBP requires– **One ATP for phosphorylation**
- Release of 6 molecules of oxygen from a green leaf, requires reduction of ____ molecules of CO_2– **6**
- The fixation of 6 molecules of CO_2 and 6 turns of the C_3 cycle are required for the removal of– **1 molecules of glucose from the pathway**
- C_3 plants show saturation of photosynthesis reaction at about– **> 450 ppm of CO_2**
- ATP are required in Calvin cycle during the formation of 1 glucose– **18**
- Present in Calvin cycle– **Reductive carboxylation**
- Number of $NADPH + H^+$ molecules used during the conversion of CO_2 into one molecule of glucose through C_3 cycle, is– **12**
- Mg^{++} is an activator of– **RuBisCO and PEPcase**

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- In a chloroplast the highest number of protons are found in– **Lumen of thylakoids**
- Optimum temperature conditions for photosynthesis in C_3 and C_4 plants are respectively– **10^0C-25^0C and 30^0C-45^0C**
- ..... ATP and NADPH molecules are respectively required to make one molecule of glucose through Calvin cycle– **18 and 12 respectively**
- If green plant cells are incubated with O^{18} labelled CO_2, which of the molecules will become radioactive when the cells are exposed to light– **Sugar**
- Number of Calvin cycle required to generate 2 molecules of hexose sugar is– **12**
- One molecule of glucose in Calvin cycle is formed from– **6 CO_2 + 18 ATP + 12 NADPH**
- CO_2 combines with RuBP in the presence of enzyme RuBisCO to form 3-PGA. This process of Calvin cycle is included under– **Carboxylation**
- RuBisCO is– **RuBP carboxylase-oxygenase**
- In photosynthesis, hydrogen in transferred from the light reaction to dark reactions by– **NADP**
- In Calvin cycle, carboxylation of RuBP fixed CO_2 in number of PGA molecules– **2 × PGA**
- Primary acceptor of CO_2 in calvin cycle– **RuBP**
- Phosphoenol pyruvate is– **Carbon compound**
- During photosynthesis when 3-PGA is changed into phosphoglyceraldehyde, reactions occurs is– **Reduction**
- Enzyme is used for carboxylation of RuBP– **Ribulose diphosphate carboxylase**
- The carbon dioxide acceptor in Calvin cycle/C_3-plants is– **Ribulose 1, 5-diphosphate (RuBP)**
- Calvin cycle is– **Supported by light**
- Number of Calvin cycles required to generate a molecule of hexose is– **6**
- For fixing one molecule of CO_2 in Calvin cycle, ATP and NADPH are required– **3 ATP + 2 NADPH**

11.8 The C_4 Pathway

- C_4 plants are twice efficient than C_3 plants in ____ but lose only 50% as much water as a C_3 plant– **Fixing carbon**
- C_4 plants exhibit "Kranz anatomy", "Kranz" means– **Arrangement of bundle sheath cell**
- In C_4 plants there is no photorespiration because– **Increased CO_2 concentration at enzyme site**
- C_4 cycle takes place in– **Sugarcane**
- The first stable product of CO_2 fixation in Sorghum is– **Oxaloacetic acid**
- The role of large bundle sheath cells found around the vascular bundles in C_4 plants is– **To increase the number of chloroplast for the operation of Calvin cycle**
- In C_4 plants, Calvin cycle enzymes are present in– **Chloroplasts of bundle sheath cells**
- During C_4 pathway, PEP combines with CO_2 in the presence of enzyme PEP Case, to form OAA. This process of initial fixation of CO_2 occurs in– **Mesophyll cells**
- Primary acceptor of CO_2 in Hatch and Slack pathway– **PEP**
- In case of C_4 pathway, the first step is– **CO_2 combines with PEP**
- Plants living in hot humid environment are– **C_4 plants**
- The first product of CO_2- fixation in C_4- plants is– **Oxaloacetate**
- In C_4- pathway, initial carbon dioxide fixation occurs in chloroplasts of– **Mesophyll cells**
- Sorghum shows high efficiency of CO_2 fixation because it performs– **Hatch & Slack pathway**
- The special leaf anatomy in C_4 plants known as– **Kranz anatomy**
- C_4 plant shows efficiency even in– **Low concentration of CO_2**
- The arrangement of cells in plants showing Kranz anatomy– **Wreath**
- C_4 plant is a– **Maize**
- Bundle sheath cells are rich in– **RuBisCO, Chlorophyll**
- PEP is CO_2 acceptor in– **C_4 plants**

11.9 Photorespiration

- In case of wheat and rice, Calvin cycle takes place in– **Mesophyll**
- C_3 plants are differ from C_4 plants in– **Presence of RuBiSCO in mesophyll cells**
- Increase in CO_2 concentration upto ____ can cause an increase in CO_2 fixation rate, beyond this the level can become damaging over long periods– **0.05 percent**
- The oxygenation activity of RuBisCO enzyme in photorespiration leads to the formation of– **1 molecule of 3-C compound**
- At mild temperature,which enzyme has more affinity for CO_2, than for O_2- **RuBisCO**
- During photorespiration, there occurs– **Utilisation of ATP**
- During photorespiration is– **Phosphoglycolate**
- Photorespiration is characteristic of– **C_3 plants**
- These can differentiate between C_3 and C_4 plants– **Photorespiration**
- That factor determines the binding of carbon dioxide to the active site of RuBisCO– **Relative O_2 and CO_2 concentration**
- The name of RuBisCO imply is– **Its active site can bind to oxygen and carbon dioxide**

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- The most abundant enzyme in the world is– **RuBisCO**
- Carbon dioxide fixation decreased in some C_3 plants– **Oxygen binds to RuBisCO**
- When the active site of RuBisCO binds to oxygen– **Phosphoglycolate**
- These is a 2-carbon molecule– **Phosphoglycolate**
- These are synthesized during photorespiration– **CO_2**

11.10 Factors Affecting Photosynthesis

- Optimum temperature for plants is– **25°-35°C**
- The 'law of limiting factors' was given by ..... in the year ..... **Blackman, 1905**
- Quality of light refers to– **Wavelength of light**
- Tropical plants have a ..... temperature optimum than the plants adapted to temperate climates– **higher**
- Plants adapted to low light intensity have– **Larger photosynthetic unit size than the sun plants**
- ..... factors, besides being one of the reactants in the process of photosynthesis, indirectly affects its rate. **Water**
- The internal factors affecting photosynthesis dependent on– **Genetic predisposition**
- Major limiting factor for photosynthesis is– **CO_2**
- Scientist gave the Law of Limiting Factors– **Blackman**
- On a normal sunny day, rate of photosynthesis (per unit time) is maximum during– **Midday**
- ..... is not an external factor affecting photosynthesis. **Leaf orientation**
- The atmospheric concentration of carbon dioxide is– **0.03 - 0.04%**
- At what percentage of sunlight does light saturation occur– **10**
- C_3 plants respond to higher CO_2 concentration by showing increased rates of photosynthesis leading to higher productivity has been used for some greenhouse crops such as– **Tomato and bell pepper**
- If plants stop photosynthesis which gas will disappear– **O_2**
- When the incident light on a plant is excessive, happens– **Chlorophyll breaks down**
- The C_4 plants are photosynthetically more efficient than C_3 plants because– **There is no photorespiration**
- Stomata close during water shortage because– **To reduce CO_2 availability**
- Day light hours are increased, the rate of photosynthesis– **Remains unchanged**

11.11 Miscellaneous

- Non-cyclic journey of electrons in light reaction is similar to cyclic transfer of electrons in– **Pumping of H^+ from stroma to lumen**
- A plant is exposed to very bright light. The environmental condition is– **Chlorophylls are subjected to photo oxidation**
- PAR stands for– **Photosynthetically Active Radiation**
- Carbon dioxide is necessary for photosynthesis. The chemical used to remove this gas most effectively from entering a control apparatus is– **Potassium hydroxide solution**
- In purple and green bacteria, oxygen is not evolved during photosynthesis because hydrogen donor is– **H_2S**
- That metal ion is a constituent of chlorophyll– **Magnesium**
- ..... pigment acts directly to convert light energy to chemical energy– **Chlorophyll a**
- Range of wavelength (in nm) is called Photosynthetically Active Radiation (PAR)– **400 - 700**
- Light range is least effective in photosynthesis– **Green**
- Chemosynthetic bacteria obtain energy from– **Inorganic chemicals**
- Energy required for ATP synthesis in PS II comes from– **Proton gradient**
- During light reaction in photosynthesis, the formed are– **ATP, hydrogen and O_2**
- Dark reaction in photosynthesis is called so because– **It does not depend on light energy**
- Splitting of water is associated with– **Inner surface of thylakoid membrane**
- Sequence of flow of electrons in the light reaction is– **PS II, plastoquinone, cytochromes, PS I, ferredoxin**
- The reaction that is responsible for the primary fixation of CO_2 is catalyzed by– **RuBP carboxylase and PEP carboxylase**
- In light reaction, plastoquinone facilitates the transfer of electrons from– **PS-II to Cytb$_6$f complex**
- During non-cyclic photophosphorylation, when electrons are lost from the reaction centre at PS II, what is the source which replaces these electrons– **Water**

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EXAM POINT

Photosynthesis and its Experiment	
Law of limiting factor of photosynthesis was proposed by– **FF Blackmann**	**DUMET-2008 Punjab MET-2008 BHU PMT (Screening)-2006 UP CPMT-2001, 2008 JIPMER-2006 AIPMT-1996 Rajasthan PMT-2007, 1998 Manipal-2005,2014 VMMC-2012 AMU-2009 MGIMS Wardha-2008**
Oxygen evolved in photosynthesis comes from water proved by– **Ruben, Hassid and Kamen**	**CG PMT-2011/Manipal-2011 MGIMS Wardha-2009 Haryana PMT-2003 JCECE-2004**
Oxygen which is liberated during photosynthesis, comes from– **H_2O**	**CG PMT-2010 Uttarakhand PMT-2008 BVP-2007 / BHU PMT-2004 BCECE-2002 / Manipal-2008**
The source of oxygen evolved during photosynthesis is– **water**	**MHT CET 5.10.2020 Shift-I JIPMER-2000 J&K CET-2000 Rajasthan PMT-1999**
The reaction center in PS II has an absorption maxima at– **680nm**	**NEET (UG) 07.05.2023**
Plant take in or 'fix' carbon dioxide from the atmosphere during - **Photosynthesis**	**MHT CET-06.10.2020 Shift-I**
Percentage of the total incident solar radiation the percentage photosynthetically Active Radiation (PAR) captured by the plants– **2 – 10% of PAR only**	**Karnataka CET-2019**
The amount of CO_2 and H_2O absorbed to produce 180 g of glucose are– **264 and 108 grams respectively**	**TS EAMCET-02.05.2018 Shift-II**
'In the presence of bright sunlight small bubbles are formed around green parts of the plant'. Who showed this– **Jan Ingenhousz**	**GUJCET-2018**
A group of plants were introduced by Otto Warburg and others for advanced study of photosynthesis– **Scenedesmus and Chlorella**	**UP CPMT-2014**
A plant is provided with ideal conditions for photosynthesis and supplied with isotope $^{14}CO_2$. When the products of the process are analysed carefully, what would be the nature of products– **Only glucose is labelled and oxygen is normal**	**Karnataka CET-2016**
Maximum photosynthesis takes place by– **Phytoplankton**	**AIPMT-1999**
Emerson's enhancement effect and Red drop have been instrumental in the discovery of– **Two photosystems operating simultaneously**	**NEET-2016 Phase-I**
Photosynthetic Active Radiation (PAR) has the following range of wavelengths– **400 - 700 nm**	**JIPMER-2007**
For assimilation of one CO_2 molecule; the energy required in form of ATP & $NADPH_2$– **3 ATP & 2 $NADPH_2$**	**AIPMT-2000**
The first step for initiation of photosynthesis will be– **Excitement of chlorophyll molecule due to absorption of light**	**AIPMT-2000**
Total amount of energy trapped by green plants in food is called– **Gross primary production**	**AIPMT-1998**

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A photosynthesising plant is releasing ^{18}O more than the normal. The plant must have been supplied with– **H_2O with ^{18}O**	**AIPMT-1993**
In photosynthesis electron transport system, manganese ions are associated with– **oxygen evolving complex**	**AP EAMCET-2002**
Photosynthetic enhancement with flashing light was first observed by– **Emerson and Arnold**	**JCECE-2007 / AFMC-2006**
Most effective wavelength of light for photosynthesis is– **Red**	**BVP-2012** **MGIMS Wardha-2006**
Primary acceptor of CO_2 in photosynthesis is– **Ribulose 1, 5 bisphosphate**	**Rajasthan PMT-2006** **J&K CET-2006**
Calvin experimented by radioactive isotope to discover the stable product of C_3– cycle occurs in – **Chlorella**	**Manipal-2010**
How much energy is used in photosynthesis– **1 to 2%**	**Rajasthan PMT-2000**
Assimilatory power in photosynthesis refers to– **ATP + $NADPH_2$**	**AMU-2003**
In photosynthesis carbon dioxide is converted to carbohydrates. It is a ..... process– **reductive**	**JIPMER-2013**
Phenomenon which converts light energy into chemical energy is– **photosynthesis**	**AFMC-2005**
Energy transfer in photosynthesis occurs as– **phycocyanin→ phycoerythrin→ carotenoid→ chlorophyll-a**	**JIPMER-2005** **BHU PMT-2003**
In photosynthesis action and absorption spectrum were related by– **Engelmann**	**Haryana PMT-2005** **JIPMER-2005** **BHU PMT-2003**
In photosynthesis there is– **oxidation of H_2O**	**DUMET-2005** **UP CPMT-2003**
---------- elements is an activator for both ribulose bisphosphate carboxylase oxygenase and phosphoenol pyruvate carboxylase in photosynthetic carbon fixation. **Mg^{2+}**	**AFMC -2009**
The role of phycobilins in photosynthesis to– **absorb and transfer energy to chlorophyll**	**CG PMT-2007**
In photosynthesis energy from light reaction to dark reaction is transferred in the form of– **ATP**	**AMU-2007**
Solar radiation of wave length less than 360 millimicrons is– **ultraviolet radiation**	**AP EAMCET-2004**
The isotope of carbon used extensively for studies in photosynthesis is– **^{14}C**	**Haryana PMT-2002**
Maximum photosynthetic activity occur in– **blue and red region of light**	**VMMC-2014** **Rajasthan PMT-1998**
In the overall process of photosynthesis, the number of CO_2, water, sugar and O_2 molecules utilized and produced is– **31**	**AMU-2012**
Isotopes used in photosynthesis are– **C^{14} and O^{18}**	**CG PMT-2006**

Where does photosynthesis take place

Quantasome are present in– **chloroplast**	**BHU PMT (Screening)-2009** **Uttarakhand PMT-2009, 2007** **VMMC-2007 / JIPMER-2012**
In plants sugar synthesis takes place in– **Stroma of chloroplast**	**AP EAPCET-22.05.2023, Shift-I**
During CO_2 fixation of photosynthesis, Oxaloacetic acid is formed in which cells– **Mesophyll cells of both CAM plants and C_4 plants**	**TS EAMCET-11.05.2023, Shift-II**
---------- cell organelles is responsible for extracting energy from carbohydrates to form ATP. **Mitochondrion**	**NEET-2017**

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In a Chloroplast the highest number of protons are found in– **Lumen of thylakoids**	**NEET-2016 Phase-I**
Stroma in the chloroplast of higher plant contains– **Light-independent reaction enzymes**	**AIPMT-2009**
Chlorophyll in chloroplasts is located in– **Grana**	**JIPMER-2007**
In chloroplasts, chlorophyll is present in the– **Thylakoids**	**AIPMT-2004**
In photosynthesis, the light-independent reactions take place at– **Stromal matrix**	**AIPMT (Re-Exam)-2015**
Chloroplast has maximum quantity of.....in stroma– **RuBP carboxylase**	**MGIMS Wardha-2011**
In the process of photosynthesis water molecule breaks is– **photolysis**	**JCECE-2005**
Oxygen is released from– **chloroplast**	**VMMC-2002**
Agranal chloroplast is common in– **C_4 plants**	**VMMC-2006**
C_{40} H_{56} is the empirical formula of– **carotene**	**Haryana PMT-2002**
Photochemical reactions in the chloroplast are directly involved in– **photolysis of water and phosphorylation of ADP to ATP**	**AMU-2005**
Pigments Involved in Photosynthesis	
The chemical formula of chlorophyll-b is– **$C_{55}H_{70}O_6N_4Mg$**	**JIPMER -2018 BHU PMT(Mains)-2005 VMMC-2003 Haryana PMT-2001 Karnataka CET-2000**
Wavelength of visible light/PAR is– **400 - 700 nm**	**Uttarakhand PMT-2010 DUMET-2008 AIIMS-2007 AIPMT-2005,2004**
The colour of chlorophyll b" in the chromatogram– **Yellow green**	**AP EAPCET-22.05.2023, Shift-II**
Chlorophyll-a is _____ in colour– **blue green**	**MHT CET-06.10.2020 Shift-I**
Photosystem II occurs in– **Grana, Thylakoids**	**SRM JEEE-2018**
The wavelength of light absorbed by Pr form of phytochrome is– **680 nm**	**AIPMT-2007**
Phytochrome is present in– **flowering plants**	**JIPMER-2008**
Phytochrome is a– **Chromoprotein**	**NEET-2016 Phase-II**
Cytochromes are found in– **Cristae of mitochondria**	**AIPMT-2015**
The size of chlorophyll molecule is– **head 15×15 Å, tail 20 Å**	**AIPMT-1989**
Chlorophyll-a is characterized by the side group– **Methyl**	**MGIMS Wardha-2011**
DCMU– **inhibits PS-II**	**Haryana PMT-2008 JIPMER-2008**
Phycobilins absorb light of wavelength– **500 – 650 nm**	**BVP-2012**
The chemical structure of chlorophyll a varies from chlorophyll b due to difference between– **CH_3 and CHO**	**J&K CET-2009 / AMU-1996**
The visible spectrum of solar radiations are primarily absorbed by carotenoids of the higher plants– **Violet and blue**	**Haryana PMT-2011 AFMC -2011 AIPMT-2003**
---------- are responsible for photomorphogenetic response. **Phytochrome**	**Punjab MET-1999**
The form of pigment which inhibits germination is– **P_{730}**	**BCECE-2007 BHU PMT-2003, 2001**

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Chlorophyll molecules are green in colour because they– **reflect green light**	**Karnataka CET-2002**
The trapping centre of light energy in photosystem-I is– **P – 700**	**HP CET-2011**
Phytochrome becomes active in– **red light**	**VMMC-2002**
Maximum absorption of light occurs in the region of– **400-700 nm**	**JIPMER-2003** **VMMC-2002** **Haryana PMT-2000**
The photosynthetic pigments viz, erythrolabe, chlorolabe and cyanolabe respectively are– **red, green, blue**	**JIPMER-2001**
Solarization is– **destruction of chlorophyll**	**BHU PMT (Mains)-2008** **BHU PMT (Screening)-2005**
Light Reaction	
The first compound that accepts carbon dioxide during dark phase of photosynthesis– **RuBP**	**Uttarakhand PMT-2008** **J&K CET-2008** **BHU PMT-2004 / BVP-2007** **Rajasthan PMT-2007** **Manipal-2008**
Cyclic photophosphorylation results in the formation of – **ATP**	**AP EAMCET-12.07.2022** **Shift-II**
During non-cyclic photophosphorylation, when electrons are lost from the reaction centre at PS II, what is the source which replaces these electrons– **Water**	**NEET-2020 Phase-II**
The deficiency of which of these elements interrupts photolysis of water during photosynthesis– **Mn and C*l***	**Karnataka CET-2020**
---------- a product of light reaction of photosynthesis. **NADPH**	**NEET-2018**
The products of light reaction during photosynthesis include– **ATP and NADPH**	**KVPY (SA)-05.11.2017**
The organelles, those take part in photorespiration are– **chloroplast, mitochondria and peroxisome**	**JIPMER-2012** **UP CPMT-2005**
The microelement, which is an integral part of the electron carrier which transfers electrons for cyt-b-f complex to PS-I is a component of– **Cytochrome-'C'-oxidase**	**AP EAMCET-2013**
The synthesis of one molecule of glucose during Calvin cycle requires– **18 molecules of ATP and 12 molecules of $NADPH_2$**	**Karnataka CET-2006**
In Photosynthesis energy from light reaction to dark reaction is transferred in the form of– **ATP**	**AIPMT-2002**
Dark reactions of photosynthesis occur in– **stroma outside photosynthetic lamellae**	**AIPMT-1991**
Ferredoxin is a constituent of– **PS-I**	**AIPMT-1991**
Quantum yield of photosynthesis is– **12%**	**Haryana PMT-2004** **Manipal-2003**
---------- is observed during cyclic phosphorylation as well as non-cyclic phosphorylation. **formation of ATP**	**DUMET-2001**
Dark reaction in photosynthesis is called so because– **It does not depend on light energy**	**CMC Ludhiana-2014**
Hill reaction was demonstrated– **in the absence of carbon dioxide**	**AMU-1996**
The radiation energy of light is converted to chemical energy and stored as– **ATP**	**Manipal-2010**
PGA is synthesized in the dark-reaction of– **photosynthesis**	**AMU-2002**
The first step in dark reaction of photosynthesis is– **attachment of CO_2 to a pentose sugar**	**MGIMS Wardha-2004** **UP CPMT-2004**
It take shorter wavelength of light and e^- from H_2O, in photosynthesis which occurs in - **PS-II**	**BHU PMT-2003** **JIPMER-2005**

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A sleep movement is a nastic response that occurs daily in response to– **dark, light**	**VMMC-2006**
PS-I and PS-II were discovered by– **Robert Emerson**	**Haryana PMT-2007**
Autoradiography technique was used to– **trace the path of carbon in photosynthesis**	**VMMC-2005 AMU-2004**
Transport of Electron	
A component of Ferridoxin is– **Iron**	**AP EAMCET-11.07.2022 Shift-II**
In light reaction, plastoquinone facilitates the transfer of electrons from– **PS-II to Cytb$_6$f complex**	**NEET-2020 Phase-I**
Electrons from excited chlorophyll molecule of photosystem II are accepted first by– **Quinone**	**AIPMT-2008**
Both photosynthesis and respiration require– **Cytochromes**	**Karnataka CET-2006**
For the synthesis of one glucose molecule the calvin cycle operates for– **6 times**	**AIPMT-2000**
Biomolecules is common to respiration-,mediated breakdown of fats, carbohydrates and proteins– **Acetyl CO-A**	**NEET-2016 Phase-II**
Typical growth curve in plants is– **Sigmoid**	**AIPMT-2015**
In the electron transport chain, in terminal oxidation, the cytochrome, which donates electrons to O_2 is– **Cytochrome-a$_3$**	**MGIMS Wardha-2009**
Cytochrome oxidase is a/an– **endoenzyme**	**Haryana PMT-2008**
Last electron acceptor in respiration is– **O_2**	**Rajasthan PMT-2006**
Cu is present in– **plastocyanin**	**UP CPMT-2003**
Photosynthetic evolution of oxygen requires– **Mn-enzyme**	**CG PMT-2009**
The final electron acceptor in pseudocyclic electron transport in chloroplast is– **$NADP^+$**	**CG PMT-2009**
Chemosmotic Hypothesis	
In CAM plants, CO_2 acceptor is– **PEP**	**BHU PMT (Screening)-2007**
Chemiosmotic mechanism of ATP production in aerobic respiration was given by– **Peter Mitchell**	**AFMC-2004**
C_3 and C_4 Pathway	
The number of Calvin cycles to generate one molecule of hexose– **6**	**MHT CET-06.10.2020 Shift-I Haryana PMT-2010 AFMC-2007 / AIPMT-1996**
C_4 plants contain– **agranal Chloroplast**	**BVP-2012 / BCECE-2011 MGIMS Wardha-2007 Haryana PMT-1999**
Calvin cycle occurs in– **chloroplasts**	**Tripura JEE-2017 BCECE-2003 BVP-2002 Rajasthan PMT-1997**
In the photosynthesis of C_4 plants the first 4 carbon compound is formed by the reaction– **Carboxylation of PEP**	**TS EAMCET 10.05.2023 Shift-I**
To reduce 1 CO_2 in C_3 Cycle assimilatory power needed is– **3 ATP + 2 $NADPH+H^+$**	**TS EAMCET 10.05.2023 Shift-I**
Primary CO_2 acceptor in C_4 plants– **Phosphoenol pyruvic acid**	**AP EAPCET-23.05.2023, Shift-II**
---------- are required for the synthesis of one molecule of Glucose during Calvin cycle. **18 ATP and 12 $NADPH_2$**	**NEET (UG) 07.05.2023**
The role of large bundle sheath cells found around the vascular bundles in C_4 plants– **To increase the number of chloroplast for the operation of Calvin cycle**	**NEET-2022**

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When one CO_2 molecule is fixed as one molecule of triose phosphate, a photochemically made, high energy chemical intermediates are used in the reduction phase– **2 ATP + 2 NADPH**	**NEET (Re-Exam)-04.09.2022**
The first stable product of CO_2 fixation in sorghum is– **Oxaloacetic acid**	**NEET-2021**
In Hatch and Slack pathway, the primary CO_2 acceptor is– **Phosphoenol pyruvate**	**NEET (Odisha)-2019**
An example of C_4 plant is– **Sugarcane**	**SRM JEEE-2019**
In the maize plant, CO_2 fixation occurs in both mesophyll and bundle sheath cells. The enzymes involved in these cells for the process respectively are– **PEP Carboxylase and RuBisCO**	**Karnataka CET-2018**
Chloroplasts without grana are known to occur in– **Bundle sheath cells of C_4 plants**	**Karnataka CET-2006**
Technique has helped in investigation of Calvin cycle– **Radioactive isotope technique**	**AP EAMCET-2011** **AIPMT-1991**
The process which makes major difference between C_3 and C_4 plants is– **Photorespiration**	**NEET-2016 Phase-II**
Stomata is open during the night and close during day time occurs in- **CAM plants**	**MGIMS Wardha-2010** **AIPMT-2003**
----------, occurs in Kranz anatomy when mesophyll have small chloroplast where as bundle sheath have larger, agranal chloroplast. **In Hatch and Slack pathway**	**Haryana PMT-2005** **JIPMER-2005** **BHU PMT-2003**
The net requirement of assimilatory power for the formation of 6 hexose molecules in maize plant is– **180 ATP, 72 NADPH**	**AP EAMCET-2008**
In Kranz anatomy, the bundle sheath cell have– **Thick walls, no intercellular spaces and large number of chloroplasts**	**AIIMS-2015**
The sugarcane plant has– **Dumb-bell shaped guard cells**	**AIIMS-2004**
C_4 - plant is– **Maize/corn**	**AIPMT-1993**
In C_4 plants, Calvin cycle operates in– **Stroma of bundle sheath chloroplasts**	**AIPMT-1989**
C_4 plants can absorb CO_2 from– **Its much low concentration**	**CMC Vellore-2007**
C_4-plants show an advantage over C_3-plants when the weather is– **hot and dry**	**BVP-2013**
The C_4 plants are different from the C_3 plants with reference to the– **The substance that accepts CO_2 in carbon assimilation and first stable product**	**BCECE-2003**
Chloroplast dimorphism is a characteristic feature of– **C_4– plants**	**WB JEE-2010**
The loss of water in C_4- plants compared to C_3-plants for the same amount of CO_2 fixed is– **One third**	**AMU-2010**
Two enzymes common to EMP pathway and C_3 cycle are– **Aldolase and triose phosphate isomerase**	**AMU-1998**
To form one molecule of glyceraldehydes phosphate in Calvin cycle– **9 ATP and 6 NADPH are required**	**Haryana PMT-2005**
3-phosphoglyceric acid (PGA) as the first CO_2 fixation product in algal photosynthesis was discovered by– **Melvin Calvin**	**Kerala PMT-2015**
Known about ATP and NADPH	
NADP is converted into $NADPH_2$ in– **Non-cycle photophosphorylation**	**AP EAMCET-11.07.2022 Shift-II**
ATP molecules are generated when one molecule of reduced coenzyme $NADH_2$ is reoxidized during respiratory chain- **Three**	**MHT CET-07.10.2020 Shift-I**
Adenosine triphosphate was discovered by– **Karl Lohmann**	**JIPMER-2016** **Karnataka CET-2004**

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In substrate level phosphorylation reaction occur– **1,3- bisphosphoglyceric acid – 3- Phosphoglyceric acid**	**AP EAMCET-2005**
The 4-carbon compound formed during RuBP regeneration reactions of calvin cycle is– **erythrose phosphate**	**AP EAMCET-2000**
Process in which the phosphate group of a compound is removed and directly added to ADP is– **substrate level phosphorylation**	**HP CET-2013 / VMMC-2003**
In Photosynthesis $NADPH_2$ is formed but in respiration if forms during– **HMP**	**BCECE-2008**
ATP molecules are obtained from fermentation of 1 molecule of glucose– **2**	**WB JEE-2009** **J&K CET-2011**
The number of NADPH molecules that are used during the conversion of carbon dioxide into one molecules of glucose– **12**	**VMMC-2013**
Energy equivalent of a NADH in ---------- numbers of ATP molecules– **3**	**J&K CET-2012 / AFMC-2004** **Karnataka CET-2000**
The role of the oxidative pentose phosphate pathway is to generate reducing potential in the form of– **NADPH only**	**AMU-1998**
Chemiosmotic theory of ATP synthesis, in the chloroplast and mitochondria, is based on– **proton gradient**	**WB JEE-2006** **Kerala PMT-2013**
Photorespiration is favoured by– **high O_2 and low CO_2**	**JIPMER-2003** **AIPMT-1996** **Rajasthan PMT-1999, 2004, 2006** **AIPMT-1996 / Punjab MET-2006**
The substrate for photorespiration is– **glycolate**	**Uttarakhand-MGIMS Wardha-2003** **JIPMER-1997 / AIPMT-1989**
The compounds produced when RuBP reacts with O_2 are– **Phosphoglycerate and Phosphoglycolate**	**AP EAPCET-23.05.2023, Shift-II**
Photorespiration is also known as --------pathway– **C_2**	**SRM JEEE -2017**
The correct sequence of cell organelles during photorespiration is– **Chloroplast-mitochondria-peroxisome**	**AIPMT (Screening)-2012**
During oxidative phosphorylation, the net gain of ATP is– **34**	**CMC Ludhiana-2012**
The first reaction in photorespiration– **oxygenation**	**VMMC-2002** **UP CPMT-2001** **AP EAMCET-1998**
The saturation point of CO_2 in C_4 plants is– **360 µl/L**	**AIIMS-27.05.2018 Shift-I**
Photosynthesis cannot continue for long if during light reaction, only cyclic-photophosphorylation takes place. This is because– **Only ATP is formed $NADPH^+ + H^+$ is not formed**	**Karnataka CET-2008**
Plants adapted to low light intensity have– **Larger photosynthetic unit size than the sun plants**	**Manipal-2007/AIPMT-2004/MGIMS Wardha-2015**
Photosynthesis in C_4 plant is relatively less limited by atmospheric CO_2 levels because– **The primary fixation of CO_2 is mediated via PEP carboxylase.**	**AIIMS-2016**
These set of elements are essential for the photosynthesis to occurs– **Mg, Fe, Mn, Cu, Cl, P**	**AIIMS-2014**
During monsoon, the rice crop of eastern states of India shows lesser yield due to limiting factor of– **light**	**AIPMT-1991**
If the supply of oxygen is decreased to an illuminated wheat plant– **Its photosynthesis would increase**	**AMU-2003**
A decrease in photosynthetic rate with increased availability of oxygen is called– **Warburg effect**	**Karnataka CET-2003**

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13.

RESPIRATION IN PLANTS

12.1 Do Plants Breathe

- The end products of respiration in plants are– **CO_2, H_2O and energy**
- The breaking of bonds leads to release of energy– **C-C bonds**
- Raw material for respiration is– **Glucose & O_2**
- In plants, respiration takes place– **All the 24 hours**
- During the process of respiration, is not released– **Oxygen**

12.2 Glycolysis

- Biological respiration is multistep process of glucose oxidation, it is to– **Facilitate the coupling of "released energy" and formation of ATP**
- The only process of cellular respiration in anaerobic organisms is– **Glycolysis**
- The complete oxidation of pyruvate by the step wise removal of all the hydrogen, leaving– **Three molecules of CO_2**
- In glycolysis, glucose undergoes ____ to form two molecule of pyruvic acid– **Partial oxidation**
- In plants, glucose which participates in glycolysis is derived from– **Sucrose**
- ___ Enzyme converts sucrose into glucose and fructose– **Invertase**
- ..... enzyme helps in transfer of phosphate group from ATP to a carbohydrate– **Phosphorylase**
- That cellular of metabolic processes can occur both in the presence or absence of O_2– **Glycolysis**
- An enzyme invertase is significant for glycolysis because it converts sucrose into - **Glucose and fructose**
- Isomers are– **3PGA and 2PGA, PGAL and DHAP, Glucose & Fructose**
- During glycolysis is associated with utilisation of ATP is– **Glucose → Glucose - 6 - phosphate**
  Fructose-6-phosphate → Fructose-1, 6-bisphosphate
- That steps of during glycolysis is associated with utilisation of ATP– **Glucose → Glucose-6-phosphate**
  Fructose-6-phosphate → Fructose-1,6-bisphosphate
- The net gain of ATP molecules in glycolysis during aerobic respiration is– **8**
- Three major ways for metabolism of pyruvic acid produced in glycolysis are– **Lactic acid fermentation, alcoholic fermentation and acrobic respiration**
- In glycolysis during which reaction, water molecule is released– **2-Phosphoglyceric acid → Phosphoenol pyruvic acid**
- How many PGAL are produced by glycolysis of 3 molecules of glucose? How many ATP are released by respiration of these PGAL till formation of CO_2 and H_2O– **6 PGAL, 120ATP**
- Partial oxidation of glucose to form 2 molecules of pyruvic acid is known as- **EMP pathway**
- Glycolysis occurs in– **Cytoplasm**
- In EMP pathway, glucose is phosphorylated to form glucose - 6 - phosphate with the help of which enzyme– **Hexokinase**
- The key product in glycolysis is– **Pyruvic acid**
- $NADH_2$ formed in glycolysis is– **During the formation of PGA from PGAL**
- Kind of molecules of pyruvic acid are formed in glycolysis– **Two**
- In glycolysis, electrons are removed by– **NAD^+**
- The first step of glycolysis is– **Phosphorylation of glucose**
- Considered as the universal pathway in a biological system is– **Glycolysis**
- Glycolysis is also called– **EMP pathway**
- The scientists that discovered glycolysis are– **Embden, Meyerhof, and Parnas**
- For two molecules of glucose, glycolysis uses and produces how many ATP molecules– **4 and 8**
- The reaction involved in reduction of NAD^+ is **PGAL → PGA**
- Glycolysis is found in– **Both aerobic & anaerobic organisms**
- Kind of molecules of $NADH^+ + H^+$ are produced if glycolysis occurs twice– **4**

12.3 Fermentation

- Enzyme is involved in fermentation is– **Pyruvic acid decarboxylase**
- Anaerobic respiration is differs from aerobic respiration in the presence of– **Incomplete breaking of complex compound**
- The net ATP production when two molecules of glucose are fermented to lactic acid– **Four**
- Different cells handle pyruvic acid produced by glycolysis– **Lactic acid, Alcoholic and Aerobic fermentation**
- Yeasts poison themselves to death when– **Alcohol concentration reaches about 13%**
- Conversion of pyruvic acid in to ethyl alcohol is facilitated by the enzyme– **Decaroxylase and dehygrogenase**
- An enzyme catalyzed, metabolic process whereby organisms convert starch or sugar to alcohol or an acid anaerobically releasing energy is called– **Fermentation**

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- In lactic acid and alcohol fermentation less than ____ of the energy in glucose is released– **7%**
- The energy-releasing metabolic process in which substrate is oxidised without an external electron acceptor is called– **Fermentation**
- In lactic acid fermentation, the number of ATP formed by the oxidation of NADH is– **Nil**
- ..... amount of energy is released from glucose during lactic acid fermentation– **Less than 7%**
- Ethyl alcohol fermentation occurs in– **Yeast**
- Anaerobic respiration takes place in– **Cytoplasm**
- Fermentation of glucose by yeast is a product of– **C_2H_5OH**
- A test tube containing sugar solution and yeast is kept in a warm place overnight. The gas collected from this mixture– **Extinguishes the flame, Turns lime water milky**
- Fermentation is represented by the equation– **$C_6H_{12}O_6 \rightarrow 2C_2H_5OH + 2CO_2 + 59$ kcal**
- Pyruvic acid is reduced to lactic acid anaerobically in– **Muscles**
- Dough kept overnight in warm weather becomes soft and spongy due to– **Fermentation**
- The end product of glycolysis is– **Pyruvic acid**
- The end products of glycolysis is– **2 pyruvic acid + 2ATP + $2NADH_2$**
- Incomplete oxidation of glucose under anaerobic condition is called **-** **Fermentation**
- When a molecule of pyruvic acid is subjected to anaerobic oxidation and forms lactic acid, there is– **Loss of 3 ATP molecules**
- Life without air would be– **Anaerobic**
- End product(s) of fermentation of sugars is/are– **Alcohol and carbon dioxide**
- That enzymes is not used under anaerobic conditions– **Pyruvate dehydrogenase**
- Product of glycolysis is consumed in alcoholic fermentation is– **$NADH_2$**
- ..... Lactic acid fermentation take place in animal cells. **In the muscles**
- Carbon dioxide is given out in which type of respiration in yeast**-** **Anaerobic respiration**
- In alcoholic fermentation, by yeast, pyruvic acid is converted to ethyl alcohol and carbon dioxide with the help of enzyme– **Pyruvic acid decarboxylase and alcohol dehydrogenase**

12.4 Aerobic Respiration

- The number of ATP are formed with the utilisation of 10 oxygen molecules in ETS with respect to $NADH_2$ oxidation– **60**
- Respiratory enzymes are located in– **Mitochondrial matrix**
- The site of glycolysis in a cell is– **Cytoplasm**
- Kreb's cycle take place in– **Mitochondrial matrix**
- The final acceptor of electrons in the electron transport chain is– **Oxygen**
- ___ molecules produced from the complete oxidation of a glucose in aerobic prokaryotes– **38 ATP**
- Complex IV of ETS refers to– **Cytochrome *c* oxidase**
- During ETS oxygen is present at the end of respiratory chain as terminal acceptor of electron. It accepts electron from– **An iron and copper containing electron carrier**
- Number of dehydrogenations and decarboxylation respectively in Kreb's cycle are– **4 and 2**
- ____ are synthesized per glucose molecule (gross synthesis) in aerobic respiration through substrate level phosphorylation– **6 ATP**
- The rate of breakdown of glucose into pyruvic acid is under certain controlling steps. The major controlling step is– **Fructose 6-P → Fructose 1, 6 bisphosphate**
- A molecule of pyruvic acid is subjected to anaerobic oxidation and form alcohol, there is– **Loss of 3 ATP**
- In EMP pathway, two redox-equivalents are removed in the form of two hydrogen atoms, during conversion of– **PGAL → 1, 3 BPCA**
- In some biochemical reactions, two redox equivalents in the form of hydrogen atoms comes out from PGAL and transferred to NAD^+, site of this process is– **Cytoplasm**
- Before entering the TCA cycle, pyruvic acid converted into acetyl CoA. This proces is– **Oxidative decarboxylation**
- Pace maker enzyme of EMP pathway is– **Phosphofructokinase**
- The net yield of ATP, except substrate level phosphorylation, from Kreb's cycle per glucose molecule is– **22**
- Two copper centres are components of– **Cytochrome c oxidase complex**
- In mitochondrial electron transport chain, reduced ubiquinone is oxidized with the help of– **Cytochrome c complex**
- Conversion of Pyruvic acid into Acetyl CoA resembles– **Ketoglutaric acid → succinly CoA**
- Link reaction or transition reaction or gateway reaction of aerobic respiration– **May link β oxidation of lipids to energy yielding reactions of mitochondria**
- Removal of complex II from ETS with– **Produce more ATP through substrate**
- Fatty acids would be broken down to ____ before entering the respiratory pathway when it is used as a substrate– **Acetyl CoA**
- ETS located on the– **Inner membrane of Mitochondria**
- ATP synthase in ETS is– **Complex V**
- Biomolecules is common to respiration-mediated breakdown of fats, carbohydrates and proteins– **Acetyl CoA**
- ..... the net gain at ATP when each molecule of glucose is converted to two molecules of pyruvic acid– **Four**
- Cytochromes are found in– **Cristae of mitochondria**

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- The role of NAD^+ in cellular respiration is– **It is a nucleatide source for ATP synthesis**
- In aerobic respiration, total number of ATP molecules formed from 20 glucose molecule is– **720**
- The respiratory electron transport system (ETS) located in plants– **Inner mitochondrial membrane**
- The number of substrate level phosphorylations in one turn of citric acid cycle is– **One**
- The electrons released from $FADH_2$ is received by– **Ubiquinone, complex II**
- The pathways outlines the correct order of events from during aerobic cellular respiration– **Glucose → Triose phosphate → Pyruvate → Krebs' cycle → $CO_2 + H_2O$ → ATP**
- As per chemiosmotic coupling hypothesis, in mitochondria, protons accumulate in the– **Intermembrane space**
- Site of Krebs' cycle in mitochondria is– **Matrix**
- Fate of pyruvic acid during aerobic respiration is– **Oxidative decarboxylation**
- Pyruvate dehydrogenase is used in converting– **Pyruvate to acetyl CoA**
- Gateway step/link reaction in aerobic respiration is called– **Formation of acetyl coenzyme A**
- TCA cycle is named so because– **The first product is citric acid containing 3 carboxylic groups**
- Krebs' cycle starts with the formation of a six carbon compound by reaction between– **OAA and acetyl CoA**
- In Krebs' cycle, OAA accepts acetyl CoA to form– **Citric Acid**
- 4-carbon compound is– **Oxaloacetic acid**
- The intermediate product between α-ketoglutaric acid and succinic acid in TCA cycle is– **Succinyl CoA**
- Intermediates of Krebs' cycle sequence is– **Succinate → Malate → OAA**
- Substrate level phosphorylation occurs during ..... step of Krebs' cycle– **Succinyl CoA → Succinic acid**
- The first 5C dicarboxylic acid in Krebs' cycle which is used in nitrogen metabolism is– **α-ketoglutaric acid**
- Associated with ATP formation (substrate level phosphorylation) the steps is– **PEP → Pyruvate, 1, 3 bisPGA → 3 PGA, Succinyl CoA → Succinic acid**
- FAD participates in Krebs' cycle as electron acceptor in between conversion of– **Succinic acid to malic acid**
- All enzymes of TCA cycle are located in the mitochondrial matrix except one which is located in inner mitochondrial membranes in eukaryotes and in cytosol in prokaryotes. This enzyme is– **Succinate dehydrogenase**
- When two molecules of acetyl CoA enter the TCA cycle, net gain at the end of the cycle is– **$6NADH_2 + 2FADH_2 + 2GTP$**
- Small protein attached to outer surface of inner mitochondrial membrane which acts as mobile carrier for transfer of electrons between complex III and IV is– **Cyt C**
- Aerobic respiration occurs in– **Cytoplasm and mitochondria**
- Two copper centres are found in– **Cytochrome C oxidase**
- Complete oxidation of organic substances is known as- **Aerobic respiration**
- During conversion of pyruvic acid into acetyl CoA, pyruvic acid is– **Oxidised**
- Krebs cycle produces– **2 CO_2**
- Aerobic respiration usually takes place in– **Higher organisms**
- The second process of aerobic respiration takes place in the – **Lumen of mitochondria**
- Final electron acceptor in respiration is– **Oxygen**
- End product of citric acid cycle is– **$CO_2 + H_2O$**
- NAD of Kreb's cycle functions as– **Acceptor of hydrogen ion and electrons**
- Cytochromes are– **Electron acceptors**
- Crucial event in aerobic respiration is– **Complete oxidation of methanol**
- *a* - ketoglutarate dehydrogenase brings about– **Oxidation and decarboxylation**
- Number of carbon atoms available in acetyl CoA is–**2**
- Who discovered the tricarboxylic acid cycle– **Hans Krebs**
- The connecting link between glycolysis and Krebs cycle is– **Acetyl CoA**
- In which process pyruvic acid is converted into CO_2 and H_2O - **Krebs cycle**
- Full form of ETS– **Electron Transport System**
- ATP is synthesized in– **F_1 particle**
- In Krebs cycle, the first product is citric acid which is a 6-carbon compound. It is formed by a reaction between– **OAA and Acetyl Co-A**
- FAD acts as an electron acceptor in between– **Succinic and fumaric acid**
- Electrons passed in ETS– **Oxygen**
- Substrate level phosphorylation occurs during– ***a*-Ketoglutaric acid → Succinic acid**
- The number of ATP molecules produced by electron transport system from Krebs cycle intermediates in a single turn is– **11**
- Ubiquinone carries electrons from– **Complex I or II to complex III**
- Most of the energy is liberated as heat while rest of energy is stored in the form of ATP during - **Cellular respiration**
- Site of generation of ATP in cell is– **Mitochondrial matrix**
- Ion is required for the working of pyruvate dehydrogenase– **Zn^{2+}**

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- Step defines the action of citrate synthase enzyme– **Oxaloacetate + Acetyl CoA → Citric acid**
- ..... step of Krebs cycle involves decarboxylation– **a-Ketoglutarate → Succinyl CoA**
- Which type of complex oxidizes the electrons produced by NADH– **Complex I**
- Reduced Ubiquinone called as– **Ubiquinol**
- By which process energy stored in NADH + H^+ and $FADH_2$ is utilized for synthesis of ATPs - **Electron transport chain (ETS)**
- The number of ATP molecules synthesized depends upon– **Nature of electron donor**

12.5 The Respiratory Balance Sheet

- During complete metabolism of glucose, the number of ATP formed is– **36**
- ATP molecules will be generated in a plant system during complete oxidation of 40 molecules of glucose is– **1440**
- For each ATP produced, how many protons pass through the intermembrane space– **Two**
- Net ATP production from fermentation of one glucose molecule is– **2 ATP**
- ATPs are formed from NADH– **3 ATP**
- Number of ATP formed per molecule of oxygen used in respiration is– **6**
- Net gain of energy from one gram of glucose during aerobic respiration is– **38 ATP**
- The net gain of energy from one mole of glucose during anaerobic respiration is– **2 ATP**
- An assumption of the respiratory balance sheet is– **Respiration is a sequential pathway**
- Number of glucose molecules required to produce 38 ATP molecules under anaerobic conditions is– **19**

12.6 Amphibolic Pathway and Respiratory Quotient

- When tripalmitin is the respiratory substrate– **The amount of CO_2 released is less than O_2 consumed**
- Number of CO_2 molecules liberated common pathway of respiration is– **Less than the CO_2 molecules liberate during link reaction**
- Respiratory quotient for proteins is– **0.9**
- It is better to consider the respiratory pathway as– **Amphibolic pathway**
- Respiratory Quotient (RQ) is– **Volume of CO_2 / Volume of CO_2 evolved/volume of O_2 consumed**
- Steps of respiration is amphibolic– **TCA cycle**
- Respiratory pathway is– **Amphibolic**
- Respiratory quotient may be represented as– **CO_2 evolved/O_2 taken in**
- Respirometer is an instrument used to measure– **Rate of respiration, Respiratory quotient**
- RQ of proteins, carbohydrates and fats in order– **< 1, 1, < 1**
- If volume of CO_2 liberated during respiration is less than the volume of O_2 used, then the respiratory substrate will be– **Fat, Protein**
- The chemical formulas of tripalmitin ..... is used as a substrate during respiration– **$C_{51}H_{98}O_6$**
- RQ in anaerobic respiration is– **Infinity**
- A value of RQ less than one means– **Oxidation of respiratory substrate consumer more O_2 than CO_2 released**
- Kreb's cycle is also called metabolic Sink as it is a common pathway for– **Carbohydrates, fats and proteins**
- The breaking down processes within the living organism and synthesis processes are respectively known as– **Catabolism and anabolism**
- For the fats to be respired, what are they broken into– **Glycerol and fatty acids**
- Full form of RQ– **Respiratory Quotient**
- Respiratory quotient is greater than one– **Organic Acids**
- Respiratory quotient is less than one for– **Sugar**
- Respiratory quotient depend– **The respiratory substrate used during respiration**
- R.Q of 0.7 is obtained when respiratory substrate is– **Tripalmitin**
- RQ of sprouting potato is– **1**
- The RQ value for tripalmitin– **0.7**
- Most common respiratory substrate is– **Glucose**

12.7 Miscellaneous

- During day time mitochondria of a greens cell release more CO_2 due to– **Glycine → Serine**
- The ultimate electron acceptor of respiration in an aerobic organism is– **Oxygen**
- Phosphorylation of glucose during glycolysis is catalyzed by– **Hexokinase**
- Pyruvic acid, the key product of glycolysis can have many metabolic fates. Under aerobic condition it forms– **Acetyl CoA + CO_2**
- Electron Transport System (ETS) is located in mitochondrial– **Inner membrane**
- Exhibits the highest rate of respiration– **Germinating seed**
- The end product of oxidative phosphorylation is– **ATP + H_2O**
- The net gain of ATP when each molecule of glucose is converted to two molecules of pyruvic acid is–**Two**
- Energy is released from glucose during lactic acid fermentation– **Less than 7%**
- The number of substrate level phosphorylations in one turn of citric acid cycle is– **One**
- Pyruvate dehydrogenase activity during aerobic respiration requires– **Magnesium**
- Conversion of glucose to glucose-6-phosphate, the first irreversible reaction of glycolysis, is catalysed by– **Hexokinase**
- Role of NAD in cellular respiration is– **It functions as an electron carrier**

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EXAM POINT

Plants Breathing and Cellular Respiration	
If 18 PGAL are formed during dark reaction, how many Calvin cycles and ATPs are required respectively?– **9 Calvin cycle, 27 ATP**	**GUJCET-2018**
The number of ATP molecules produced during aerobic and anaerobic respiration are……and …… respectively. **38 and 2**	**HP CET-2018**
The overall goal of glycolysis, Krebs cycle and the electron transport system (ETS) is the formation of– **ATP in small stepwise units**	**AIPMT-2007**
Oxidation of palmitic acid yield– **129 ATP**	**AIPMT-1998**
Which respiratory substrate requires the highest number of O_2 molecules for its complete oxidation– **Triolein**	**AP EAMCET-2009**
Step of respiration are controlled by– **Enzymes**	**UPCPMT-2002**
Net gain of ATP in prokaryotes from a molecule of glucose when oxidized is– **38**	**UP CPMT-2002**
Active increase in respiration during mineral absorption is known as– **Salt respiration**	**J&K CET-2002**
Through which process, phospho-glyceraldehyde is converted into biphosphoglyceric acid– **Phosphorylation and oxidation**	**GUJCET-2008**
Cristae helps in– **Respiration**	**BHU PMT (Mains)-2010**
When malic acid is the respiratory substrate– **The amount of carbon dioxide released is 1.33 times more than the oxygen consumed**	**Uttarakhand PMT-2010**
Cyanide resistant respiration is characteristic of– **Yeast, bacteria**	**CG PMT-2011 BHU PMT(Mains)-2006 DUMET-2002**
Complete oxidation of a molecule of glucose yield– **36 ATP molecules**	**BVP-2006**
Know about glycolysis	
Glycolysis to Krebs cycle– **Acetyl Co-A**	**HP CET-2011 CMC Vellore-2010 CG PMT-2009, 2007 Uttarakhand PMT-2007 BCECE-2007, 2006 UP CPMT-2003, 2001 Rajasthan PMT-1996**
The ratio of total ATP molecules formed to net ATP molecules in oxidation of a glucose molecule through glycolytic pathway– **2:1**	**TS EAMCET-31.07.2022 Shift-I**
The biomolecule common to respiration involving fat, carbohydrate and protein– **Acetyl CoA**	**TS EAMCET-09.08.2021 Shift-I**
Total how many ATP molecules are formed by substrate level phosphorylation in glycolysis– **4 ATP**	**MHT CET-08.10.2020 Shift-I**
If mitochondria is absent in mature RBC what will be the source of energy– **Glycolysis**	**AIIMS-25.05.2019 Shift-II**
The substrate required for the only oxidative reaction that occurs in the process of glycolysis– **Glyceraldehyde 3–phosphate**	**TS EAMCET-02/05/2018 Shift-II AP EAMCET-2007**
In reactions of glycolysis, a molecule of water is removed from the substrate– **2-phosphoglycerate → Phosphoenol pyruvate**	**AIIMS-2017**
During glycolysis the compounds PGAL and DHAP are formed from fructose 1, 6 diphosphate by– **Cleavage**	**MHT CET-2017**

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Number of oxygen molecules utilized in glycolysis is– **0**	**MHT CET-2017**
The outcome of Calvin cycle include– **One glucose, 18 ADP, 12 NADP**	**Karnataka CET-2017**
Excess CO_2 suppress cell growth and productivity by– **Inhibiting respiration, Altering PH of the medium**	**SRM JEEE -2017**
Common enzyme in glycolysis and pentose phosphate pathway is– **Hexokinase**	**UP CPMT-2011**
Net gain of ATP during glycolysis are– **8**	**GUJCET-2008 Haryana PMT-2007 UP CPMT-2006**
Concerned with CO_2 fixation– **Calvin cycle**	**UP CPMT-2003**
Oxidation of pyruvate to CO_2 and H_2O occur through– **Citric acid cycle, Tricarboxylic acid, Krebs cycle**	**AMU-2008**
Kinase enzymes is responsible for formation of glucose to form – **Glucose-6-phosphate**	**BHU-PMT (Screening)-2008**
Embden, Meyerhof and Parnas scientists discovered the EMP pathway of – **Glycolysis**	**BVP-2002**
In glycolysis, during oxidation electrons are removed by– **NAD^+**	**AIPMT-2004**
Conversion of pyruvate to acetyl CoA reactions is an example of– **Oxidative decarboxylation**	**Karnataka CET-2011**
The number of glucose molecules are required for the formation of 52 pyruvic acid molecules at the end of glycolysis– **26**	**MHT CET-2016**
Acetylation of pyruvate takes place in the– **Perimitochondrial space**	**MHT CET-2014**
The first compound which is common for both glucose & fructose in glycolysis– **Fructose-6-phosphate**	**BCECE-2015**
The fermentation	
Anaerobic respiration after glycolysis is called– **Fermentation**	**BCECE-2010 MGIMS Wardha-2008 Uttarakhand PMT-2007 WB JEE-2006**
The end product of fermentation are– **CO_2 and C_2H_5OH**	**BVP-2012 VMMC-2002 Haryana-2000, 2001 AIPMT-1997**
The energy-releasing process in which the substrate is oxidized without an external electron acceptor is called– **Fermentation**	**AIPMT-2010, 2008**
Continuous addition of sugars in 'fed batch' fermentation is done to– **Purify enzymes**	**AIPMT (Screening)-2011**
Ethanol is commercially produced through a particular species of– **Saccharomyces**	**AIPMT (Screening)-2011**
The most common substrate used in distilleries for the production of ethanol is– **Molasses**	**AIPMT (Screening)-2011**
Formation of alcohol by yeast is– **Anaerobic process, extracellular, microbial**	**AMU-2011**
Rice wine is– **Sake**	**AIIMS-2011**
Aerobic respiration produces more usable chemical energy than fermentation, because fermentation involves– **Partial oxidation of food**	**AIIMS-1995, 2014**
When yeast ferments glucose, the products obtained are– **Ethanol and CO_2**	**AIPMT-1994**
In lactic acid fermentation, the number of ATP formed by the oxidation of NADH is– **Nil**	**AMU-2014**
Alcoholic fermentation takes place in the presence of- **Zymase**	**Rajasthan PMT-2003**
Fermentation is represented by equation– **$C_6H_{12}O_6 \rightarrow 2C_2H_5OH + 2CO_2 + 18$ kcal**	**CG PMT-2004**

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Aerobic Respiration	
Molecules of $FADH_2$ are produced per every glucose molecule in aerobic respiration– **Two**	**TS EAMCET-10.05.2023, Shift-II**
In the mitochondrial matrix, pyruvate is first converted to acetyl CoA by a process called– **Oxidative decarboxylation**	**Tripura JEE-2019**
Glucose to CO_2 and H_2O metabolic conversions requires– **Oxygen**	**KVPY SA-2019**
If Respiratory substrate like sucrose, dipeptide- protein and lipid are present in living cell, which substrate is utilized first– **Sucrose**	**GUJCET-2018**
In mitochondria, protons accumulate in the– **Inter membrane**	**AIPMT (Mains)-2011**
Glycolate induces opening of stomata in– **Low CO_2 concentration**	**AIPMT-2001**
In photosynthesis $NADPH_2$ is formed but in respiration its forms during– **HMP (Hexose monophosphate)shunt of glucose oxidation**	**UP CPMT-2006**
Ganong's respiroscope is used to demonstrate– **Production of carbon dioxide during aerobic respiration**	**Karnataka CET-2004**
Product of aerobic respiration in Krebs cycle – **Malic acid**	**Rajasthan PMT-2004**
Number of water molecules produced per molecule of glucose during aerobic respiration is– **$6H_2O$**	**Haryana PMT-2002**
In the mesophyll cells of CAM plants, CO_2 fixation during day occur through– **RuBP-carboxylase**	**Uttarakhand PMT-2006**
During aerobic respiration the final electron acceptor is– **Oxygen**	**MHT CET-2016 Punjab MET-2003**
How much of the energy released during aerobic respiration is approximately conserved in the form of ATP– **40%**	**MHT CET-2015**
The process by which there is inhibition of aerobic respiration by atmospheric O_2 is– **Pasteurs effect**	**DUMET-2004**
During aerobic respiration, acetyl Co-A is synthesized in– **Mitochondrial matrix**	**AMU-2014**
One mole glucose, on complete oxidation, yields energy– **6,86,000 cal**	**CG PMT-2004**
Krebs Cycle	
Krebs cycle takes place in– **Mitochondria**	**Manipal-2012 / AMU-2009 AFMC-2002 /JIPMER-2001 Rajasthan PMT-2000**
In Krebs cycle, reaction representing substrate level phosphorylation is– **Succinyl CoA → Succinic acid**	**TS EAMCET 10.05.2023 Shift-I**
How many times decarboxylation occurs during each TCA cycle– **Twice**	**RE-NEET (UG)-06.06.2023 (Manipur)**
The 5-C compound formed during TCA cycle is– **α-ketoglutaric acid**	**NEET (Re-Exam)-04.09.2022**
How many ATP molecules would be produced from complete aerobic breakdown of one molecule of acetyl Co-A– **12**	**MHT CET 5.10.2020 Shift-I**
How many oxidation steps are involved in aerobic respiration during acetylation and Krebs cycle– **Four**	**MHT CET-07.10.2020 Shift-I**
In C_4 plants, C_3 cycle takes place in– **Bundle sheath cells**	**Karnataka CET-2020**
A competitive inhibitor of succinic dehydrogenase is– **Malonate**	**AIPMT-2008**
In Krebs' cycle GTP is formed by– **Substrate level phosphorylation**	**UP CPMT-2011**
Biological oxidation in Krebs cycle involves– **O_2**	**WB JEE-2006**
Citric acid cycle is the alternate name– **TCA cycle**	**WB JEE-2009**
The pyruvic acid formed during glycolysis is oxidized to CO_2 and H_2O in a cycle called– **Krebs cycle**	**J&K CET-2008**

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FAD is electron acceptor in the citric acid cycle during the oxidation of– **Succinic acid to malic acid**	**Kerala PMT-2015 WB JEE 2009**
In citric acid cycle, decarboxylation occurs when– **Citric acid converts to α-ketoglutaric acid**	**AMU-2010**
In Eukaryotes, TCA cycle takes place in - **Mitochondria**	**KVPY SB & SX-2012**
Total yield in one Krebs cycle– **$3NADH_2$, $1FADH_2$, 1ATP**	**CG PMT-2006**
Krebs cycle was discovered by Krebs in pigeon muscles in 1940. Which step is called gateway stem/link reaction/transition reaction in respiration– **Formation of acetyl-CoA**	**AFMC-2006**
Most of the biological energy is supplied by mitochondria through– **Oxidizing TCA substrate**	**AMU - 2008 VMMC-2008,2006**
One turn of Krebs' cycle for the oxidation of 1 mole of sucrose produce how many ATP molecules– **12**	**CG PMT-2011**
The Nobel Prize for the discovery of TCA cycle and ATP biosynthesis was awarded to– **Krebs and Lipman jointly**	**CG PMT-2011**
The reaction which is catalyzed by a protein that is not found in the matrix of mitochondria is– **Oxidation of succinic acid**	**AP EAMCET-2008**
ETS and Oxidative Phosphorylation	
This event occurs during electron transport system and oxidative phosphorylation of mitochondria– **Oxygen acts as the final hydrogen acceptor**	**AP EAPCET-23.05.2023, Shift-I**
The product (s) of cyclic photophosphorylation– **ATP**	**KVPY SB & SX-2019 Kerala PMT-2015**
ATP formation occurs through– **Photophosphorylation, Oxidative phosphorylation, Substrate level phosphorylation**	**AIIMS-26.05.2019 Shift-I**
Oxidation of $NADH_2$ and $FADH_2$ takes place during ETS, which is associated with– **Cristae**	**MHT CET-2019**
Co-enzymes of Electron Transport Chain in mitochondria are– **Cytochromes,dehydrogenases, flavoproteins**	**MHT CET-2018**
During which stage in the complete oxidation of glucose are the greatest number of ATP molecules formed from ADP– **Electron transport chain (ETC)**	**JIPMER-2007**
The name of process of aerobic respiration, in which energy is provided in steps in electron transport chain, is– **Oxidative phosphorylation**	**WB JEE-2006**
Phytochrome occurs in two forms. In which form it promotes the germination of seeds of some species– **Pf_r forms**	**UP CPMT-2004**
Photophosphorylation was discovered by– **Arnon**	**Punjab MET-1999**
The ATP production in photosynthesis is called– **Photophosphorylation**	**Uttarakhand PMT-2007**
In Electron Transport system (ETS), which of the following cytochrome reacts with oxygen– **Cyt – a_3**	**VMMC-2013**
Which stains is used for determination of cytochrome oxidase activity in the cell– **Janus green B**	**Manipal-2011**
Non-cyclic photophosphorylation results in the production of– **ATP and NADPH**	**J&K CET-2012**
Vitamins is used in electron transport system– **Riboflavin**	**AMU -2000**
Ferredoxin is found in– **PS - I**	**CG PMT-2006**
Inner mitochondrial membrane possesses enzyme– **ATP - synthetase, succinate dehydrogenase and respiratory chain enzymes**	**CMC Ludhiana-2007**
What is common in photosynthesis and respiration– **Cytochromes**	**CMC Ludhiana-2008**
The carrier which transfer the electrons in electron transport system– **Cytochrome**	**CMC Ludhiana-2008**
Complex V of the ETS of inner mitochondrial membrane is – **ATP synthase**	**Kerala PMT-2009**
The correct sequence of electron acceptor in ATP synthesis is– **Cyt. b, c, a, a_3**	**AIPMT-1997**

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Phosphorylation in respiration is known as– **Oxidative phosphorylation**	**MHT CET-2006**
In the electron transport system present in the inner mitochondrial membrane, complexes I and IV are respectively– **NADH dehydrogenase and cytochrome oxidase complex**	**Kerala PMT-2011**
The Respiratory Balance Sheet	
Respiratory substrate fielding maximum number of ATP molecules is– **Glucose**	**CG PMT-2011**
Amphibolic pathway	
How many ATP molecules are synthesized in complete aerobic respiration of dipeptide molecule during Amphibolic pathway– **30 ATP**	**GUJCET-2017**
During anaerobic respiration in yeast– **CO_2, ethanol and energy are end products**	**Haryana PMT-2004**
The process of deriving glucose from fats and proteins is called– **Gluconeogenesis**	**CG PMT-2011**
Respiratory quotient	
When the organic acid is oxidised in respiration, the value of R.Q. becomes– **More than one**	**MGIMS Wardha-2013** **CG PMT-2005** **Rajasthan PMT-1997, 1995**
R.Q. is always less than one in– **Castor (fats)**	**BHU PMT (Mains)-2009** **Haryana PMT-2005** **BHU PMT-2003** **HP CET-2012** **VMMC-2004**
In a germinating seed when protein is aerobically oxidized, the R.Q. value will be– **Less than one**	**BHU PMT (Screening)-2011** **Karnataka CET-2003** **DUMET-2001** **AMU-2001** **AP EAMCET-2000**
When tripalmitin is used as respiratory substrate in aerobic respiration, the process consumes 145 molecules of Oxygen and releases 102 molecules of CO_2, then RQ value would be– **0.7**	**Karnataka CET-2019**
RQ of malic acid is– **1.33**	**JIPMER-2018**
Respiratory Quotient (RQ) is less than one when the substrate is– **Fats and Protei**	**VMMC-2011**
Respiratory quotient of carbohydrate is– **Equal to 1**	**CMC Ludhiana -2013** **BCECE-2005**
The RQ of $C_{39}H_{72}O_6$ is– **0.718**	**Manipal-2011**
Respiratory Quotient (R.Q.) is defined as– **R.Q. = $\frac{\text{vol. of } CO_2 \text{ evolved}}{\text{vol. of } O_2 \text{ used}}$**	**AMU-2005** **Uttarakhand PMT-2004** **Manipal-2004**
R.Q. of sprouting potato tubers will be– **1**	**Karnataka CET-2002**
Respiratory quotient of mixed diet is– **0.85**	**Haryana PMT-2002**
RQ of succulents is– **0**	**CG PMT-2006**
The respiratory quotient during cellular respiration would depend on– **The nature of the substrate**	**Karnataka CET-2009** **Manipal-2009** **JIPMER-2014**
More CO_2 is evolved than the volume of oxygen consumed when the respiratory substrate is– **Organic acid**	**Haryana PMT-2003**
Respiratory quotient of oxalic acid is– **4**	**BVP-2013**
The lowest respiratory quotient– **Tripalmitin**	**BCECE-2015**
The Respiratory Quotient (RQ) of glucose is– **1.0**	**WB JEE-2014**

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13.

PLANT GROWTH AND DEVELOPMENT

13.1 Growth

- In dicotyledonous plants and gymnosperms, the lateral meristems, vascular cambium and cork cambium appear– **Later stage in life**
- One single maize root apical meristem can give rise to more than _____ new cells per hour– **17500**
- Growth in a dorsiventral leaf is expressed as– **Increase in surface area**
- Cells of root apex and shoot apex contains– **Abundance of protoplasm and large conspicuous nuclei**
- Increased vacuolation, cell enlargement and new cell wall deposition are the characteristics of the cell– **Elongation phase**
- Growth can be measured in various ways. ..... can be used as parameters to measure growth– **Increase in cell number, Increase in cell size, Increase in length and weight**
- Meristematic cells are characterised by– **Thin cellulosic cell walls, Prominent nuclei, Dense protoplasm**
- Increase in girth (diameter) of plant as a result of the activities of lateral meristems is called– **Secondary growth**
- Secondary growth generally occurs in– **Dicots, Gymnosperms**
- Growth at cellular level, is principally a consequence of increase in the amount of– **Protoplasm**
- Growth is maximum in zone of– **Cell elongation**
- Fastest phase of S-shaped growth curve is– **Log phase**
- The factors ..... influence growth are– **Nutrients, Water, oxygen, light, temperature**
- A primary root grows from 5 cm to 19 cm in a week. Calculate the absolute growth rate (AGR) and relative growth rate (RGR) over the period– **AGR- 14 cm, RGR– 2.8**
- Most realistic growth curve is– **Sigmoid**
- The maximum growth rate occurs in– **Exponential phase**
- Analysis of growth at cellular level is done by– **Increase in protoplasm**
- Volume of a watermelon cell may increase upto– **3,50,000 times**
- In terms of wall thickening and protoplasmic modifications, plant cells attain their maximum size during– **Phase of maturation**
- Fundamental characteristic of a living being– **Growth**
- Responsible for unlimited growth of the plant is– **Meristems**
- The exponential growth can be expressed as– $W_1 = W_0 e^{rt}$
- The curve for arithmetic growth is– **Linear**
- The phase of maturation is characterized by– **Thick cell wall and protoplasmic modifications**
- Growth is primarily affected by two climatic factors namely– **Light & temperature**
- During differentiation, cells undergo few to major structural changes in their cells walls and_____– **Protoplasm**

13.2 Differentiation, Dedifferentiation and Redifferentiation

- Formation of interfascicular cambium and cork cambium are the examples of– **Dedifferentiation**
- Examples of tissues that are formed by redifferentiation are– **Secondary xylem, Secondary phloem, cork cell**
- Example of differentiation– **Lignocellulosic wall thickenings of tracheids, Major structural changes occur in protoplasm**
- Living differentiated cells which have otherwise lost the capacity to divide, can regain the power of division under certain conditions. This phenomenon is termed as– **Dedifferentiation**
- The cells derived from root apical and shoot apical meristems and cambium differentiate and mature to perform specific functions. This act leading to maturation is termed as– **Differentiation**
- The process in which the cells or tissues lose the capacity to divide but mature to perform specific functions refers for– **Redifferentiation**
- Kinds of growth is exhibited by plants– **Open form of growth**
- Example of dedifferentiation is– **Cork cambium and interfascicular cambium**

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13.3 Development

- Environmental heterophylly is observed in– **Buttercup**
- Development is– **Sum total of growth and differentiation**
- ..... includes all the changes that an organism undergoes during its life cycle, from seed germination to senescence. **Development**
- In aquatic plant Ranunculus flabellaris (buttercup), submerged leaves are highly dissected where as the emerged leaves are broad and lobed. This is an example of – **Heterophylly, Environmental plasticity**
- Examples of heterophylly are– **Cotton, Buttercup, Coriander**
- Plasticity in plant growth means that– **Plant growth is dependent on the environment**
- Development in plants refers to all the changes from– **Seed germination to senescence**
- Development is considered as the sum of– **Growth and differentiation**
- Intrinsic and extrinsic factors that affect development of plants are– **Auxin, light and ethylene**

13.4 Plant Growth Regulators

- Plant growth regulators (PGR) are– **Simple organic substance of different chemical composition**
- Phytohormone is a derivative of carotenoids– **ABA**
- Phototropic curvature is the result of uneven distribution of– **Auxin**
- Gaseous plant hormone is– **Ethylene**
- Cell elongation in internodal regions of the green plants takes place due to– **Gibberellins**
- Plant growth regulators helping the plants to increase their absorption surface– **Ethylene**
- Growth regulator helps to prevent fruit and leaf drop at early stage but promote the abscission of older mature leaves and fruits– **Auxin**
- Auxin and ____ show antagonistic effect in case of apical dominance but synergistic effect in case of differentiation– **Cytokinin**
- ABA helps seeds to withstand desiccation and factors unfavourable for growth by inducing– **Dormancy**
- Cousins confirmed the release of a volatile substance from ..... that hastened the ripening of stored unripened bananas. **Ripened oranges**
- Objective of decapitation (removal of shoot tips in tea plantations and in hedge making) is parallel to– **Auxins**
- _____ is used to speed up the malting process in brewing industry– **GA_3**
- _____ hormone is derived from pigments in plants– **ABA**
- Breaks the dormancy of storage organs and induce germination in peanut seeds– **Ethylene**
- Auxins was first isolated from– **Human urine**
- _____ PGR promote nutrient mobilisation– **Cytokinin**
- Deficiency of ____ causes chlorosis in older leaves– **Magnesium**
- Excess of manganese may induce– **Deficiencies of iron, magnesium and calcium**
- Name the plant growth regulator which upon spraying on sugarcane crop, increases the length of stem, thus increasing the yield of sugarcane crop– **Gibberellin**
- During seed germination its stored food is mobilised by– **Gibberellin**
- ..... phytohormones promotes male flowering and parthenocarpy– **Gibberellin**
- You are given a tissue with its potential for differentiation in an artificial culture. ..... pairs of hormones would you add to the medium to secure shoots as well as roots– **Auxin and cytokinin**
- Production of cucumber has increased manifold in recent years. Application of ..... phytohormones has resulted in this increased yield as the hormone is known to produce female flowers in the plants. **Ethylene**
- Fruit and leaf drop at early stages can be prevented by the application of– **Auxins**
- Auxin can be bioassayed by– **Avena coleoptile curvature**
- Coconut water contains– **Cytokinin**
- The affect of apical dominance can be overcome by ..... hormone– **Cytokinin**
- Which phytohormone would you use if you are asked to 'bolt' a rosette plant– **Gibberellins**
- ..... physiological effects is caused in plants by gibberellic acid– **Elongation of genetically dwarf plants**
- The activity of α-amylase in the endosperm of a germinating seed of barley is induced by– **Gibberellin**
- Kinetin, a modified form of adenine was discovered from– **Autoclaved herring sperm DNA**
- Hormone primarily concerned with cell division is– **Cytokinin**
- Natural cytokinins are synthesised in regions where rapid cell division occurs. Such regions are– **Root apices, Young fruits, Developing shoot buds**
- If you forget to add cytokinin to the culture medium. What would happen– **Callus will not develop shoot buds**
- In addition to auxins, ... must be supplied to culture medium to obtain a good callus in plant tissue culture– **Cytokinins**

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- In plant tissue culture experiments, high auxin to cytokinin ratio favours ..... development and high cytokinin to auxin ratio favours ..... development **Root, shoot**
- A plant hormone used for inducing morphogenesis in plant tissue culture is– **Cytokinin**
- The phenomenon of apical dominance can be overcome by exogenous application of– **Cytokinins**
- Hormone that promotes growth of lateral buds and has negative effect on apical dominance is– **Cytokinin**
- Auxin and cytokinin are antagonistic in which of the function– **Apical dominance**
- Induction of cell division activity and delay in senescence is caused by– **Cytokinin**
- Artificial ripening of fruits is caused by the treatment of– **Ethylene**
- If a fully ripen fruit gets mixed with unripe fruits, the unripe fruits will– **ripe quickly**
- The most widely used compound as a source of C_2H_4 is – **Ethephon**
- Root hair development is promoted by– **Ethylene**
- A farmer grows cucumber plants in his field. He wants to increase the number of female flowers in them. ..... plant growth regulator can be applied to achieve this– **Ethylene**
- Seed dormancy is caused by– **ABA**
- The hormone ..... reduces transpiration rate by inducing stomatal closure is– **ABA**
- Bud dormancy is induced by– **ABA**
- Hormone responsible for ageing is– **ABA**
- In tea plantations and hedge making, gardeners trim the plants regularly so that they remain bushy. Scientific explanation behind this is– **Removal of apical dominance, Growth of lateral buds**
- Removal of auxin source demonstrates that leaf abscission is ..... by auxin and apical dominance is ..... by auxin. **Inhibited, promoted**
- Functions of auxins include– **Promoting flowering in pineapple, Inducing parthenocarpy in tomato**
- To get a carpet like grass, lawns are moved regularly, this is done to– **Remove the apical bud**
- Artificial application of auxins like IAA, IBA and NAA to unpollinated pistils can form– **Seedless fruits**
- Compound which inhibits the action of auxin is known as - **Antiauxin**
- The fruits can be left on the tree longer using GA so as to extend the market period. This is due to which function of GA– **Delaying senescence**
- Spraying sugarcane with gibberellins increases the yield by as much as 200 tonnes per acre. GA performs it by– **Internodal elongation**
- Dwarfness can be controlled by treating the plant with– **Gibberellic acid**
- The term 'auxin precursor' refers to– **Raw material used in the synthesis of auxin**
- High concentration of auxin is present in– **Stem apex**
- ..... effects of auxins on plants is the basis for their commercial application in tissue culture– **Induction of root formation in stem cuttings**
- Cytokinins are mostly– **Amino purines**
- The pair that consists of plant growth promoters only– **Auxins and cytokinins**
- ..... is both a growth promoter as well as a growth inhibitor. **Ethylene**
- Hormone involved in phototropism is– **IAA**
- ..... plant hormone induces the phenomenon of phototropism in plants– **Auxins**
- Development in plants is influenced by both intrinsic and extrinsic factors. ..... is included under intrinsic factors. **Growth regulators**
- Auxin was discovered by– **Darwin**
- Auxin was isolated from– **Oat seedlings**
- Auxin is not isolated from plants– **NAA**
- Xylem differentiation is controlled by– **IAA**
- Used in tea plantation and hedge making– **Auxin**
- Gibberellins are obtained from ..... the fungus. **Gibberella fujikuroi**
- Gibberellin was discovered by– **E. Kurosawa**
- First discovered gibberellin is– **GA_3**
- Bolting is a function of– **Gibberellin**
- Kinetin is a modified form of– **Adenine**
- Cytokinin like activity– **Kinetin, Zeatin**
- Senescence is delayed by the administration of– **Gibberellin**
- Improves the shape of apple– **GA_3**
- Skoog and Miller discovered– **Kinetin**
- Overcomes the apical dominance– **Zeatin**
- Ethylene was discovered by– **H.H. Cousins**
- Promote nutrient mobilization – **Cytokinin**
- Gaseous PGR is– **Ethylene**
- Breaks seed dormancy– **Ethylene**
- Induces fruit - set in pineapple– **Ethylene**
- The widely used PGR in agriculture is– **Ethylene**
- Responsible for respiratory climactic is– **Ethylene**
- Adenine derivatives are– **Cytokinins**
- Phytohormone is responsible for promotion of female flowers in cucumbers– **Ethylene**
- Widely used for plant propagation– **Auxin**
- Chemically identical to ABA is– **Inhibitor - β, Dormin**

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- Seed germination is inhibited by– **ABA**
- Stress hormone is known as– **Abscisic Acid**
- Antagonist to GAs is– **ABA**
- Stimulates closing of stomata is– **ABA**
- Phototropic and geotropic movements are linked to– **Auxin**
- Leaf fall occurs as abscission layer is formed when the content of– **Auxin decreases**
- Highest concentration of auxins exist in– **Growing tip of plants**
- Terpene derivative is **GA**
- Hormones can replace vernalisation– **Gibberellin**
- The source of hormone ethylene is– **Ethephon**
- IAA stands for– **Indole-3-Acetic Acid**
- Stimulates growth or cell enlargement– **Auxin**
- Weedicide used as a– **2, 4-D**
- Internodal elongation is stimulated by– **Gibberellin**
- Used in root formation on stem cuttings– **IBA**
- Prevents falling of fruits– **NAA**
- Abscisic acid controls– **Leaf fall and dormancy**
- The hormone responsible for enhancement of the respiration rate of fruits thereby leading to its early ripening is– **Ethylene**
- Parthenocarpy can be induced by– **Auxins**
- Cut or excised leaves remain green for long if induced to root or dipped in– **Cytokinins**
- PGR used to speed up the malting process in brewing industry is– **Gibberellin**
- Gibberellins differ from auxins since they cause– **Stem elongation**
- The regulator which retards ageing/senescence of plant parts is– **Cytokinin**
- Response of growth hormone is true for ethylene– **Increase in fruit ripening**
- The hormone that controls xylem differentiation and helps in cell division is– **Auxin**
- Gibberellins induce– **Hydrolyzing enzymes in germinating seeds**
- Gibberellin is synthesized in– **Rhizome & root tip, Young developed leaves, Young expanded leaf**
- Growth hormones connected with bolting are– **Gibberellins**
- Apical dominance is shown by– **Auxin**
- The hormone which was discovered through 'foolish seedling' disease of rice is– **Gibberellic acid**
- Cytokinin is a hormone whose main function is– **Induction of cell division & delay in senescence**
- Movement of auxin is– **Basipetal**
- Plant growth regulator promotes female flowers in cucumbers thereby increasing the yield– **Ethylene**
- Promotes senescence and abscission of plant organs especially of leaves and flowers– **Ethylene**
- Apical dominance is– **Suppression of growth of nearby lateral axillary buds by apical bud**
- Removal of apical bud results in– **Formation of lateral branching**
- Seeds to withstand desiccation and other factors unfavourable factors for growth– **ABA**
- Derivative of carotenoids is– **Inhibitor-B, Dormin, ABA**
- Plants bend towards light because– **Cells on the shaded side elongate more**
- Internodal elongation in plants, just before flowerings, is called as– **Bolting**
- The pineapple, under natural conditons is difficult to blossom, has been made to produce fruits throughout the year by the application of– **Auxin**
- Auxin was isolated from tips of coleoptiles of– **Oat seedlings by F.W. Went**
- Bakane disease of rice seedlings is caused due to– **GA**

13.5 Photoperiodism

- Deposition of new materials inside the cell wall of cells starts in– **Elongation phase**
- ____ structures show unlimited growth in plants– **Roots**
- The simplest expression of arithmetic growth is– **Root elongation at constant rate**
- Quantitative comparisons between growth of the living systems made by– **Absolute growth rate and Relative growth rate**
- The growth pattern during development of embryo from zygote in plant is– **First geometric then arithmetic**
- During photoperiodism, the hypothetical hormonal substance migrates from leaves to _____ for inducing flowering– **Shoot apices**
- A few normal seedlings of tomato were kept in a dark room. After a few days they were found to have become white-coloured like albinos. The terms will you use to describe them– **Etiolated**
- Plants ..... require an exposure to light for a period greater than critical day length are– **Long day plants**
- Phytohormones migrates from ..... for inducing flowering only when the plants are exposed to the necessary inductive photo period. **Leaves to shoot apices**
- If a dark period of a short day plant is interrupted by a flash of light, it will– **Not produce flowers**
- The site of perception of light/dark duration are– **Leaves**
- Photoperiodic stimulus is picked up by– **Phytochrome**

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- Photoperiodism influences– **Vegetative growth, Seed germination, Internode elongation**
- The plants in which there is no correlation between exposure to light duration and induction of flowering responses are known as– **Day-neutral plants**
- Plants which daily require shorter period of darkness for flowering is called– **Long day plants**
- Geotropic response of roots is due to– **More growth on lower side**
- A plant which requires more than 12 hours of light in order to flower. **Long day plant**
- Effect of day length duration on plant development/flowering is– **Photoperiodism**
- Flowering in plants depends on– **Exposure of light & dark period, Relative duration of exposure**
- ..... influences the process of flowering in plants. **Photoperiod**
- In short day plants, flowering is induced by– **Photoperiod below a critical length and uninterrupted long night**
- If the tip of the seedling is cut off, growth as well as bending ceases because it hampers– **Perception of light stimulus**

13.6 Vernalization

- _____ are required for vernalisation in plants– **Low temperature, O_2, meristem cells**
- Promotion of flowering by a period of low temperature is called as – **Vernalization**
- Requires low temperature for flowering– **Maize, Sugar beet**
- Flowering can be affected in certain plants– **By quantitative exposure to low temperature, By qualitative exposure to low temperature**
- Significance of vernalization is/are– **Promotion of flowering by a period of low temperature, Prevention of precocious reproductive development**
- Example of vernalization is seen in– **Biennials**
- Process of vernalization can be induced by– **GA**
- The process of vernalization is– **Aerobic**

13.7 Seed Dormancy

- Effect of inhibitory substances can be removed by subjecting the seeds to chilling conditions or by the application of certain chemicals such as– **Gibberellic acid and Nitrates**
- Reasons are responsible for seed dormancy– **Impermeable and hard seed coat, Presence of chemical inhibitors, Immature embryos**
- Longevity of seed can be prolonged by keeping them at– **Humidity and low temperature**
- Absolutely necessary for germination– **Water**
- Dormancy of seed is– **Phase of inactive growth**

13.8 Miscellaneous

- Heterophylly means– **The appearance of different forms of leaves on the same plant species**
- The growth of roots during water logging conditions– **Growth is inhibited**
- Factor determines the direction of movement of main root and stem– **Gravity**
- Growth of an organ is defined as– **Irreversible increase in size**
- _____ have the capacity of self perpetuation– **Meristematic cells**
- _____ is difficult to measure directly– **Increase in protoplasm content**
- Constant growth rate in root and shoot elongation can mathematically expressed as– **$L_t = L_0 + rt$**
- ..... plants does not show plasticity– **Maize**
- Ethylene is used for– **Hastening the ripening of fruits**
- The term synergistic action of hormones refers to– **When two hormones act together and contribute to the same function**
- Apples are generally wrapped in waxed paper to– **Prevent aerobic respiration by checking the entry of O_2**
- To increase sugar production in sugarcanes, they are sprayed with– **Gibberellin**
- ABA acts antagonistic to– **Gibberellic acid**
- Monocarpic plants are those which– **Flower once and die**
- The gaseous plant growth regulator is used in plants to– **Promote root growth and root hair formation to increase the absorption surface**
- The site of perception of light in plants during photoperiodism is– **Leaf**
- The plant hormone used to destroy weeds in a field is– **2, 4-D**
- Plants follow different pathways in response to environment or phase of life to form different kinds of structures. This ability is called– **Plasticity**
- The process of growth is maximum during– **Log phase**
- Coined the term 'Kinetin'– **Skoog and Miller**
- Perception of photoperiod necessary for induction of flowering in plants– **Leaves**
- It takes very long time for pineapple plants to produce flowers. Which combination of hormones can be applied to artificially induce flowering in pineapple plants throughout the year to increase yield– **Auxin and Ethylene**

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EXAM POINT

Plants Growth	
The deteriorative processes in plants, that naturally terminate their functional life, are collectively called as – **Senescence**	**UP CPMT-2009 Rajasthan PMT-2009 BVP-2006 AMU-2005 Manipal-2004 Uttarakhand PMT-2004**
The maximum growth rate occurs in– **Exponential phase**	**CMC Ludhiana-2012, 2009 JCECE-2009 Manipal-2007 CG PMT-2006 AIPMT-2004**
Growth can be measured by– **Auxanometer, Horizontal microscope, Crescograph**	**SRM JEEE -2019, 2017 UPCPMT-2002**
Excess amount of CO_2– **Retards growth**	**CG PMT-2011**
The growth in diameter of stem is due to– **Vascular Cambium**	**Rajasthan PMT-2000**
The maximum growth of plants occurs during– **Spring season**	**Rajasthan PMT-2000**
A physiological response of plant to the duration of light and darkness is a– **Photoperiodism**	**AMU-2001**
Phototropic curvature in Avena coleoptile is the result of uneven distribution of– **Auxin**	**MGIMS Wardha-2013**
Maximum amount of growth in root occurs– **Behind the apex**	**BCECE-2011**
Part of the embryo comes out first during seed germination– **Radicle**	**BVP-2010, 2014**
Tunica corpus theory is used for– **Shoot apex**	**Uttarakhand PMT-2007**
Senescence as an active developmental cellular process in the growth and functioning of a flowering plants, is indicated in– **Leaf abscission**	**Rajasthan PMT-2010**
At which stage the enzymatic actions start in plant– **Germination**	**AMU-2011**
Growth is an irreversible process seen at all organizational levels. It consists of– **Organ growth, Subcellular growth and Cell growth**	**CG PMT-2007**
Substances synthesized during growth are– **Protoplasmic and Apoplasmic**	**CG PMT-2007**
Quiescent center occurs in- **At the tip of root apex**	**VMMC-2014**
A few normal seedlings of tomato were kept in a dark room. After a few days they were found to have become white-coloured like albinos. Terms will you use to describe them– **Etiolated**	**AIPMT-2014**
In the absence of light increases – **Elongation of internodes**	**SRM JEEE-2018, AIPMT-1989**
If the shoot apex of any young plant growing in a pot, is cut off, events are more feasible to occur– **The axillary buds in the remaining upper leaves will grow faster**	**AP EAMCET-1998**
Necessary conditions for seed germination is– **Light Water and O_2**	**UP CPMT-2005**
Crescograph was invented by– **J.C. Bose**	**BHU PMT-2001**
Auxetic growth is increase in– **cell volume only**	**BVP-2010**
Rapid and dramatic increase in shoot length is called as– **Bolting**	**J&K CET-2007**
Phase of Growth and Development	
Differentiation is change of tissues from_____– **Meristematic to permanent**	**SRM JEEE-2019**
Etiolation in plants is caused when they are – **grown in dark**	**DUMET-2009**
The pigment involves in photoperiodic change in plants is– **Phytochrome**	**Rajasthan PMT-2009**
The morphogenetic property of cytokinin was first experimentally proved by– **Skoog and Miller**	**AP EAMCET-1999**
The histogen theory was proposed by– **Hanstein**	**Rajasthan PMT-1996**
The movement of tendrils in response to touch is known as– **Thigmotropism**	**UP CPMT-2010**
A plant has different types of leaves, the condition is known as– **Heterophylly**	**HP CET-2011**

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Grafting involved the formation of a young plant– **With the root of plant (stalk) and shoot of plant(scion)**	**JIPMER-1999**
The response of plants to light was first of all discovered by– **Darwin**	**Haryana PMT-1999**
In a longitudinal section of a root, starting from the tip upward, the four zones occur in the following order– **Root cap → cell division → cell enlargement → cell maturation**	**AIPMT-2004**
Klinostat is employed in the study of– **Growth movements**	**AIPMT-1993**
Gibberellic acid induces flowering in–**Long day plants under short day conditions**	**AIPMT-1997**
The movement of auxin is largely– **Basipetal**	**AIPMT-1994**
If the growing plant is decapitated, then– **Axillary buds are activated**	**AIPMT-1994**
Senescence as an active developmental cellular process in the growth and functioning of a flowering plant, is indicated in– **Leaf abscission**	**AIPMT-2008**
The process in which mature differentiated cells reverse to meristematic activity to form callus is called– **De-differentiation**	**Karnataka CET-2007**
The timing of seasonal activities of plants in relation to change in environment condition is termed as– **Phenology**	**DUMET-2010**
The branch of science dealing with senescence is called– **Gerontology**	**AMU-2002**
Plants growth regulators	
The Plant Growth Regulators that inhibit apical dominance, delay senescence, promote root hair formation and play an important role in seed development and maturation respectively are– **Cytokinins, Gibberlic Acid, Ethylene and Absisic acid**	**TS EAMCET-11.05.2023, Shift-II**
For the chemical defence against herbivores, Calotropis has – **Cardiac glycosides**	**RE-NEET (UG)-06.06.2023 (Manipur)**
The derivative of carotenoids– **Abscisic acid**	**AP EAMCET-12.07.2022 Shift-II AIPMT-2009**
The gaseous plant growth regulator is used in plants to– **promote root growth and root hair formation to increase the absorption surface**	**NEET-2022**
It takes very long time for pineapple plants to produce flowers. Which combination of hormones can be applied to artificially induce flowering in pineapple plants throughout the year to increase yield– **Auxin and Ethylene**	**NEET-2019**
Zeatin has been obtained form– **Maize**	**SRM JEEE-2019**
In a garden, the gardner cut the apical bud of Lawsonia (Mehandi) because _____– **Lateral bud grows**	**GUJCET-2017**
Artificial application of auxins like IAA, IBA and NAA to unpollinated pistils can form– **Seedless fruits**	**BVP-2010 MGIMS Wardha-2009**
ABA closes stomata but which hormone encourages them to open– **Cytokinin**	**BHU PMT (Screening)-2011**
Mitosis can be inhibited by– **Colchicine**	**VMMC-2015**
The commonly used plant growth hormone in tea plantations is– **IAA**	**Rajasthan PMT-2011**
Gibberellin was obtained form– **Fungus (Gibberella fujikuroi)**	**Rajasthan PMT-2000**
Pruning help in making the hedge dense as – **It frees auxiliary buds from apical dominance**	**CMC Ludhiana-2009**
6-(4-hydroxy-3 methyl-trans-2-butenyl amine) purine is also called as– **Zeatin**	**AMU-2015**
Primary precursor of IAA is– **Tryptophan**	**BHU PMT-2003**
The term cytokinin was coined by– **Letham**	**Rajasthan PMT-1996**
Highest concentration of auxin is found in– **Root and shoot tips**	**UP CPMT-2003**

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Mobilization of stored food in germinating seed is triggered by– **GA**	**AFMC -2009**
The scientist, who performed some experiments with oat coleoptiles for the presence of a substance which could diffuse into agar blocks is– **First Went**	**J&K CET-2009**
Length of grapes stalks increases due to– **Gibberellins**	**J&K CET-2014**
Internodal elongation is associated with– **Gibberellin**	**J&K CET-2012**
Growth hormones is associated with stomatal movements– **ABA**	**J&K CET-2012**
The most essential precursor of ethylene is– **Methionine**	**AMU-2011**
Seedless watermelons are obtained by – **Triploidy**	**AMU-2011**
Polyploidy can be induced by the application of– **Colchicine**	**Uttarakhand PMT-2009**
Although the seeds are rich in auxin glucosyl esters, still they do not exhibit any physiological change like growth. The reason is– **Seed dormancy**	**VMMC-2006**
Through their effect on plant growth regulators, what do the temperature and light control in the plants– **Flowering**	**AIPMT (Mains)-2012**
A chemical believed to be involved in flowering is– **florigen**	**AIPMT-1991**
Cut or excised leaves remain green for long if induced to root or dipped in– **cytokinins**	**AIPMT-1988**
Bananas can be prevented from over-ripening by– **Dipping in the ascorbic acid solution**	**AIPMT-1992**
Dwarfness can be controlled by treating the plant with– **Gibberellic acid**	**BHU PMT-2001 AIPMT-2000, 1992**
Perishable vegetables can be maintained fresh for a longer period by spraying on them with a solution of– **Cytokinin**	**Karnataka CET-2012**
Synthetic growth regulators is used to promote synchronized flowering in pineapple– **2-chloroethyl phosphonic acid**	**Karnataka CET-2010**
The first plant hormone was isolated from human urine– **Indole acetic acid**	**UP CPMT-2014**
The combination of plant growth regulators are used for feminising effect in cucurbits are – **Auxins > Ethylene > Cytokinins**	**UP CPMT-2014**
The chemical nature of gibberellins are– **Acidic**	**Karnataka CET-2006**
The carbon ratio of lutein, abscisic acid and GA_{27} is– **8 : 3 : 4**	**AP EAMCET-2010**
Green potatoes are toxic due to– **Solanine**	**BHU PMT (Screening)-2009**
An example of mitogen is– **Cytokinin**	**AMU-2015**
Anti auxin are used in picking cotton balls– **TIBA (2, 3, 5-triiodobenzoic acid)**	**CMC Ludhiana-2015**
Sprouting of potato can be prevented in storage by– **Maleic hydrazide**	**WB JEE-2007**
The photoperiodism	
The production of the flowers in response to light hours in a day is– **Photoperiodism**	**AP EAPCET-23.05.2023, Shift-I NEET-2021 CMC Vellore-2010**
The site of perception of photoperiod necessary for induction of flowering in plants are– **Leaves**	**NEET-2019**
Flash of light in dark inhibits flowering in– **SDP**	**MGIMS Wardha-2009**
Exposure to light inhibits the process of germination in the seeds of plant– **Allium**	**AP EAMCET-2002**
The hormone of flowering in long day plants– **Gibberellins**	**Uttarakhand PMT-2008 BVP-2007**
Beta vulgaris is a– **Long day plant**	**J&K CET-2007**
Genetic dwarfness can be overcome by treating with– **Gibberellins**	**HP CET-2012**
The hormone causes stunted growth in pea– **Ethylene**	**HP CET-2012 / VMMC-2004**
Short day plant is– ***Xanthium***	**Manipal-2010 Haryana PMT-2007**

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Long day plants (LDP) are – **Spinach, Wheat and Raddish**	**Haryana PMT-2008 Rajasthan PMT-2000**
A day neutral plant– **Sunflower*(Helianthus annuus)***	**CMC Vellore-2010 AMU-2009 Punjab MET-2003**
One set of a plant was grown at 12 hours day and 12 hours night period cycles and it flowered, while in the other set night phase was interrupted by flash of light and it did not produce flower. Under which category will you place this plant– **Short day**	**CMC Ludhiana-2009 AFMC-2008 Manipal-2007**
What type of plants will flower when short photoperiods are followed by long photoperiods– **Short-long day plants**	**AMU-2002**
A long day plant flowers only if exposed to a light period– **More than its critical day length**	**AMU-2001**
The flowers of Oxalis open during the day and close at night. Such type of movement is called as – **photonasty**	**Manipal-2012**
A sleep movement in plants is a nastic response, that occurs daily in response to– **dark, light**	**Uttarakhand PMT-2004 Manipal-2004**
The process Cholodny-Went theory is concerned with– **Phototropism**	**J&K CET-2008**
Opening and closing of flowers represent a kind of– **Nastic movement**	**HP CET-2011**
In IUCN Red List (2004) documents, the extinction 784 species includes– **338 vertebrates, 359 invertebrates and 87 plants**	**J&K CET-2014**
Importance of day length in flowering of plants was first shown in– **Tobacco**	**BHU PMT (Screening)-2010**
Plants flower in response to a certain ratio of light to dark in a day, which reflects seasonal changes. This response is known as– **Photoperiodism**	**VMMC-2006**
The photoperiodic cycles of 6 hours of dark period and 18 hours of light period induce flower formation in– **Long day plant**	**Uttarakhand PMT-2010 AP EAMCET-2003**
The effect of daily light period on flowering is called– **Photoperiodism**	**JIPMER-2001**
The plant in which 'night break' is inhibitory to floral induction– **Xanthium**	
Stomata open during day because the guard cells have– **Chlorophyll**	**CG PMT-2006**
If a plant produces flowers when exposed only to alternating periods of 5 hours light and 3 hours dark in a 24 – hour cycle, then the plant should be a _____. **Long day plant**	**Karnataka CET-2014**
Cytochrome is– **Fe porphyrin ring**	**AIPMT-2001**
Proteinaceous pigment which control the activities concerned with light– **Phytochrome**	**AIPMT-2001**
Plant hormones	
Abscission of flowers and leaves is caused by– **Ethylene**	**TS EAMCET 10.05.2023 Shift-I**
The hormone promotes internode/petiole elongation in deep water rice– **Ethylene**	**NEET (UG) 07.05.2023**
Name of a gaseous plant hormone is– **Ethylene**	**Tripura JEE-2022 WB JEE-2009**
Zn is essentially for – **Bio-synthesis of auxinss**	**AP EAMCET-25.09.2020 Shift-II**
Cytokinin involves– **Kinetin, zeatin, BAP**	**AIIMS-26.05.2018 Shift-I**
Belong to Auxin– **IAA, IBA, NAA**	**AIIMS-26.05.2018 Shift-II**
Pollen grains can be stored for several years in liquid nitrogen having a temperature of– **–196°C**	**NEET-2018**
Regulation to restrict the movement of diseased plant material from one place to another are called– **Plant quarantine**	**Manipal-2003**

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Gibberellins cause– **Elongation of genetically dwarf plants**	**BVP-2005 Haryana PMT-2004 Manipal-2003**
The micro element required for the synthesis of IAA is represented in its ionic form as a co-factor in this enzyme– **Carbonic anhydrase**	**AP EAMCET-2002**
Removal of apical (terminal) bud of a flowering plant (or pruning of a flowering plant) leads to– **Promotion of lateral branches**	**Haryana PMT-2010**
Coconut milk (coconut water) is widely used in tissue culture because it contains– **Cytokinin**	**Haryana PMT-2010 AFMC-2007**
The reason for apical dominance is– **Auxin**	**Haryana PMT-2006**
Thigmotropism occur due to the– **Contact stimuli**	**Haryana PMT-2006**
Which plant hormone promotes seed, bud dormancy and causes stomatal closure– **Abscisic acid (ABA)**	**Haryana PMT-2006**
Multiple shoots are produced in meristem culture because the culture medium contains– **Cytokinin for overcoming apical dominance**	**CMC Vellore-2007**
A good example of an auxin type herbicide is– **2, 4-dichlorophenoxyacetic acid (2,4-D)**	**AP EAMCET-1997**
Morphogenesis is controlled by an interaction between– **auxins and cytokinins**	**CG PMT-2011**
First natural cytokinin was discovered by– **Skoog and Miller**	**BVP-2012**
Phytohormones, resemble the nucleic acids in some structural aspects– **Cytokinin**	**AP EAMCET-2000**
Function of ABA is– **Growth inhibition**	**AFMC-2010**
6-furfuryl amino purine, 2, 4-dichloro phenoxy acetic acid and indole 3-acetic acid are– **Kinetin, synthetic auxin and natural auxin**	**CMC Ludhiana-2010**
Auxin was first named by– **Frits Warmolt Went**	**MGIMS Wardha-2013**
Plant hormones are– **Growth regulators, Growth promoters, Growth inhibitors**	**Manipal-2004 Uttarakhand PMT-2003**
The non-auxin herbicide which is used to kill broad leaved plants in grass lawns is– **Dalapon**	**BHU PMT (Mains)-2005**
Phytochrome occurs in two forms. In which form it promotes the germination of seeds of some species– ***Pfr* forms**	**MGIMS Wardha-2004**
A ripe mango, kept with unripe mangoes causes their ripening. This is due to the release of a gaseous plant hormone– **Ethylene**	**KVPY SB & SX-2012**
The preventive methods of fruit drop is by spraying– **Auxin**	**CG PMT-2007**
Substances, which originate at the tip of stem, root and control the growth of different organs are– **Hormones**	**CG PMT-2007**
Climacteric fruit shows– **High respiration rate during ripening**	**Uttarakhand-2005**
A phytohormone which increases the production of starch hydrolyzing enzymes during the germination of maize seeds, is employed for – **Induction of seedless fruits in grapes**	**AP EAMCET-2003**
The phytohormone which increases the concentration of potassium in guard cells is also responsible for the induction of– **Cell division**	**AP EAMCET-2004**
Pruning of plants promotes branching because the axillary buds get sensitized to– **Cytokinin**	**Haryana PMT-2004**
'Richmond Lang effect' deals with– **Delay in senescence by cytokinins**	**AP EAMCET-2001**
The presence of auxins in a solution could be tested by– **Avena sativa stem tip test**	**CG PMT-2006**
Bakanae disease in rice plants is caused by– **Gibberella fujikuroi**	**VMMC-2011**
In callus culture, roots can be induced by supply of– **Auxin**	**VMMC-2011**
The alkaloid used for induction of polyploidy, is– **Colchicines**	**VMMC-2011**

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One hormone hastens maturity period in juvenile conifers, a second hormone controls xylem differentiation, while the third hormone increases the tolerance of plants to various stresses. They are respectively– **Gibberellin, Auxin, ABA**	**AIIMS-2016**
ABA is involved in– **Dormancy of seed**	**AIIMS-2014**
Leaf fall occurs in tree when there is an increase in the concentration of – **Abscisic acid**	**Karnataka CET-2005**
Which part would be most suitable for raising virus-free plants for micropropagation– **Meristem**	**AIPMT (Screening)-2012**
A genetically engineered antiviral protein is – **Interferon**	**Punjab MET-2007**
The chemical which are produced by host plants due to infection as a defence reaction to pathogen, are called– **Phytoalexins**	**Punjab MET-2006**
Endopeptidase of plant kingdom is– **Papain**	**Punjab MET-2011**
Plasticity	
Plants follow different pathways in response to environment or phases of life to form different kinds of structures. This ability is called– **Plasticity**	**NEET-2021**
An innovative remedy for plastic waste– **Polyblend**	**NEET (Odisha)-2019**
A plant species when grown in shade tends to produce thinner leaves with more surface area, and when grown under abundant sunlight starts producing thicker leaves with reduced surface area. This phenomenon is an example of– **Phenotypic plasticity**	**KVPY SB & SX-2019**
A plant bearing different type of leaves is called– **Heterophylly**	**Haryana PMT-2006**
The type of movement is present in Mimosa pudica is – **Seismonastic movement**	**Rajasthan PMT-2006, 1998**
A sleep movement in plants is a nastic response, that occurs daily in response to– **Dark, Light**	**AMU-2005**
Thermonastic movement is related to– **High temperature**	**UP CPMT-2013**
Opening and closing of lowers represent a kind– **Nastic movement**	**BVP-2003**
When an animal turns sideways to the Sun to get the maximum amount of Sun on its flanks, this is an example of– **Orientation**	**BVP-2008**
Vernalisation and seed dormancy	
Treatment of seed at low temperature under moist conditions to break its dormancy is called– **Stratification**	**JCECE-2014, 2013, 2009 CMC Ludhiana-2009 AFMC-2008 / AIPMT-2006**
Hormone replacing the requirement vernalization is– **Gibberellins**	**CMC Vellore-2009 UPCPMT-2009 Rajasthan PMT-2009 Punjab MET-2009**
Inhibitory substances in dormant seeds cannot be removed by subjecting seeds to– **Ascorbic acid**	**NEET-2020 Phase-II**
Germination of seed inside fruit is a peculiar characteristic– **Mangroves/halophytes**	**BVP-2013**
The production and storage of energy in mitochondria increases during– **Seed germination**	**AFMC-2001**
Secondary dormancy is due to the absence of– **Favourable conditions**	**Haryana PMT-2011**
The removal of seed dormancy by mechanical removing of seed-coat is called as– **Scarification**	**AFMC-2000**
Energy for the early growth of a developing bean embryo comes from– **Leaves in the seed**	**CG PMT-2007**
Dry seeds can induce higher temperature that the germinating seeds because– **Hydration makes the enzymes more sensitive to temperature**	**CG PMT-2007**
The form of pigment which inhibits germination is– **P_{730}**	**Haryana PMT-2005 JIPMER-2005**
Hormones can replace vernalisation– **Gibberellins**	**AIPMT-1989**

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14.

BREATHING AND EXCHANGE OF GASES

14.1 Respiratory Organs

- Ventrally and laterally, the thoracic chamber is formed by– **Sternum and ribs respectively**
- The breathing rate of a normal healthy man is– **12-16 times per minute**
- Which type of respiration CO_2 is given out – **Aerobic respiration**
- Carbonic anhydrase is found in high concentration in– **Erythrocytes**
- Intercostal muscles are found attached with– **Ribs**
- ..... structure of man is similar to gills of fish– **Lung**
- In man and other mammals, air passes from outside into the lungs through– **Nasal cavity, Pharynx, Larynx, Trachea, Bronchi, Bronchioles, Alveoli**
- Mammalian lungs have an enormous number of minute alveoli (air sacs). This is to allow– **More surface area for diffusion of gases**
- External respiration refers to exchange of gases between– **Environmental air and lungs**
- The process which involves the gaseous exchange between the organism and its environment is known as– **Respiration**
- In frog, cutaneous respiration takes place through– **Their moist skin**
- The covering of the lung is called– **Pleural membrane/pleura**
- The function of conducting part in respiratory system of human is– **Clears foreign particles, Humidifies atmospheric air**
- ..... vertebrates have the most well-developed respiratory system. **Mammals**
- Prevents collapsing of trachea– **Cartilaginous rings**
- The site of actual diffusion of O_2 and CO_2 between blood and atmospheric air– **Exchange part of respiratory system**
- Conducting part of respiratory system in human body extends from the– **External nostrils upto terminal bronchioles**
- A person starts coughing suddenly while swallowing some food. It could be due to improper movement of– **Epiglottis**
- The primary sites for exchange of gases is– **Alveoli**
- Lungs have large number of narrow tubes called– **Bronchioles**
- ..... is the end part of pulmonary or lung division and place of gaseous exchange. **Alveolus**
- **Provide nutrients and O_2 to all the living cells of body**
- Respiratory mechanism is controlled by– **Central nervous system**

14.2 Mechanism of Breathing

- The respiratory volume or capacity can differentiated live born or dead born child– **Residual volume**
- Tidal air in mammalian lungs is– **The air that normally goes in and comes out of the lungs during breathing**
- Inspire can occur– **Intra pulmonary pressure (IPP) is less than atmospheric pressure**
- The volume of thoracic cavity increases because of– **Contraction of diaphragm and external intercostal muscles**
- Volume of thoracic chamber increases in anteroposterior and dorso-ventral axis in rabbit by– **Contraction of diaphragm and external intercostal muscles respectively**
- Expiration occurs due to– **Relaxation of diaphragm and external intercostal muscle**
- The volume of pulmonary cavity when there is an increase in the volume of thoracic chamber– **It increases**
- Diaphragm is a dome-shaped muscular structure which separates– **Thoracic cavity from abdominal cavity**
- The value of tidal volume in a normal healty man is– **Approximately 6000-8000 ml/min**
- Every 100 ml of deoxygenated blood delivers approximately_____ **4 ml of CO_2 to the alveoli**
- The amount of air remaining in the air passage and alveoli at the end of quiet respiration is called– **Functional residual capacity**
- Inspiration occurs when there is a negative pressure in the lungs with respect to atmospheric pressure. This negative pressure is achieved when– **Intrapulmonary pressure is less than the atmospheric pressure**
- ..... parts are involved in the mechanism of breathing– **Abdominal muscles, Diaphragm**
- ..... changes occur in diaphragm and intercostal muscles when expiration of air takes place– **Internal intercostal muscles contract and diaphragm relax**

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- A person breathing normally at rest, takes in and expels approximately half a litre of air during each respiratory cycle. This is called– **Tidal volume**
- The inspiratory capacity includes– **Tidal volume + inspiratory reserve volume**
- After forceful inspiration, the amount of air that can be breathed out is equal to– **IRV + TV + ERV**
- The exchange of gases in the alveoli of the lungs takes place by– **Simple diffusion**
- ..... would have the same O_2 content. **Blood entering the right side of the heart and blood leaving the right side of the heart**
- Partial pressure of oxygen and carbon dioxide (in mm Hg) in alveolar air respectively are– **pO_2 104 pCO_2 40**
- The CO_2 content by volume, in the atmospheric air is about– **0.0314%**
- Among the partial pressure of oxygen is maximum in– **Expired air**
- In lungs, the air is separated from the venous blood through– **Squamous epithelium + endothelium of blood vessel**
- Concentration gradient for exchange of oxygen is from ..... to ..... **Alveoli, Blood**
- A large proportion of oxygen remains unused in the human blood even after its uptake by the body tissues. This O_2– **acts as a reserve during muscular exercise**
- CO_2 concentration is true for– **More in alveolar air than in expired air**
- During rest, the metabolic needs of the body are at their minimum. Which is indicative of this situation– **Rate of breathing, Pulse rate, O_2 intake and CO_2 output**
- Total lung capacity of adults is– **5.2 - 5.8 L**
- The vital capacity of lungs is– **3.5 - 4.5 L**
- Residual volume in the lungs of an human is– **1200 ml**
- During inspiration, air passes into lungs due to– **Increase in volume of cavity and fall in lung pressure**
- The amount of air that moves in and out of the lungs, with each normal inspiration and expiration is called– **Tidal volume**
- During inspiration, the diaphragm– **Contracts and flattens**
- Lowest value is– **Tidal volume**
- About 1200 ml of air left in lungs is called– **Residual volume**
- Capacity of human lungs for air in a healthy person is– **6000 ml**
- Vital capacity of lungs is equal to– **IRV + ERV + TV**
- Vital capacity of lungs of an average human is– **3000–4500 ml**
- In expiration, diaphragm becomes– **Relaxed**
- Name the specialised set of muscles which is present in between the ribs– **Intercostal muscles**
- Human respiratory is not a part of– **Lumen**
- Total volume of air that a person can inspire after a normal expiration is termed as– **Inspiratory capacity**
- Maximum volume of air that a person can inspire after a forced expiration– **Vital capacity**
- TLC (Total Lung Capacity) can be correctly represented as– **Vital Capacity + Residual Volume**
- The volume of air during forced expiration and forced inspiration is called– **Vital capacity**

14.3 Exchange of Gases

- During breathing does not occur– **Diffusion of gases**
- Partial pressure of oxygen in the atmospheric air and alveoli is respectively– **159 and 104 mm Hg**
- Factor can affect the rate of diffusion of gases– **Solubility of the gases, Pressure of the gases**
- Oxygen carried by blood is liberated in– **Capillaries of body**
- The thickness of the diffusion membrane is– **Less than a millimeter**
- Exchange of gases in lung alveoli occurs through– **Simple diffusion**

14.4 Transport of Gases

- The pH of venous blood is only slightly more acidic than the pH of a arterial blood because– **The H^+ generated from H_2CO_3 is buffered by dexoxyhaemoglobin in venous blood**
- A graph is plotted between pO_2 and percentage saturation of Hb with O_2 is known as– **O_2 dissociation curve**
- The last step involved in respiration is – **Utilisation of O_2 by body cells and resultant release of CO_2**
- Reduction in pH of blood will– **Decrease the affinity of haemoglobin with oxygen**
- Reference to transport of oxygen– **Higher H^+ concentration in alveoli favours the formation of oxyhaemoglobin**
- Besides RBC, blood plasma also carries O_2 in solution. The percentage is– **2-3%**
- The carbon dioxide is transported via blood to lungs mostly– **Carbaminoheamoglobin and as corbonic acid**
- Bulk of oxygen diffuses from the plasma into the red blood corpuscles where it joins loosely with Fe^{2+} ions of haemoglobin (Hb) to form bright red oxyhaemoglobin (HbO_2). This process is called– **Oxygenation**

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- When temperature decreases, oxy-Hb curve will become– **More steep**
- In the tissues, high concentrations of carbon dioxide– **Decreases the affinity of haemoglobin to oxygen but increases its affinity to hydrogen**
- Fetal haemoglobin bas X affinity for oxygen than that of mother's haemoglobin during gestation. X is– **Higher**
- That percentage of CO_2 is carried in dissolved state through plasma– **7%**
- The enzyme that increases the reaction rate between CO_2 and H_2O in red blood cells is– **Carbonic anhydrase**
- Reference to transport of respiratory gases by blood– **Haemoglobin is necessary for transport of oxygen and carbonic anhydrase for transport of carbon dioxide**
- Every 100 mL of deoxygenated blood delivers approximately– **4 mL of CO_2 to the alveoli**
- Although much CO_2 is carried in blood, yet blood does not become acidic, because– **CO_2 transport and blood buffers play an important role in it**
- The bind several hundred times more strongly to the haemoglobin than oxygen is– **CO**
- Majority of oxygen gets transported– **In form of oxyhaemoglobin**
- Dissociation of oxyhaemoglobin occurs in tisues due to– **Low pO_2**
- Carbonic anhydrase is mostly active in– **RBC**
- Maximum amount of CO_2 (70 - 75%) transport occurs as– **Bicarbonate**
- Oxygen haemoglobin dissociation curve will shift to right on decrease of– **pH**
- One molecule of haemoglobin carries how many oxygen molecules– **4**
- Determination of oxygen carried by haemoglobin is done by– **Partial pressure of oxygen**
- Oxygen dissociation curve is highly useful in studying the effect of factors like– **pCO_2, H+ concentration, Binding of O_2 with haemoglobin**
- About 7 percent of CO_2 is carried in a dissolved state through– **Plasma**
- 20-25% of CO_2 is carried by haemoglobin as– **Carbamino-haemoglobin**
- Factors favourable for the formation of oxyhaemoglobin are– **Less H^+ concentration and low temperature**
- Carboxyhaemoglobin is produced due to– **CO**
- Haemoglobin is a red coloured pigment present in the RBCs. The element found in it– **Iron**
- Determination of oxygen carried by haemoglobin is done by– **Partial pressure of oxygen**
- Oxygen dissociation curve of haemoglobin is– **Sigmoid**
- Percentage of oxygen supplied by haemoglobin is– **97%**
- Percentage of O_2 is carried in a dissolved state through the plasma– **3 percent**
- CO_2 is mainly carried as– **HCO_3^-**
- Amount of O_2 and CO_2 delivered by 100 ml oxygenated blood to tissues and 100 ml deoxygenated blood to alveoli respectively is– **5 ml, 4 ml**
- pCO_2 is high and pO_2 is low as in the tissues, binding of carbon dioxide– **Increases**
- Enzyme is involved in this conversion–

$$CO_2 + H_2O \rightleftharpoons H_2CO_3 \rightleftharpoons H^+ + HCO_3^-$$

Carbonic anhydrase

- Dissociation of carbon dioxide from carbamino-haemoglobin takes place when– **pCO_2 is low and pO_2 is high in alveoli**
- % of O_2 being carried by blood plasma is– **2 - 3%**
- The CO_2 concentration in the blood increases, the breathing rate will– **Increase**
- Increase CO_2 & temperature will cause the O_2/Hb, dissociation curve to shift– **Towards right**

14.5 Regulation of Respiration

- The blood leaving the lungs has all its haemoglobin oxygenated and gives up O_2 to the tissue because– **O_2 concentration is lower at tissue level than in the lungs**
- The chloride content of RBC will be higher than that of plasma in– **Systematic veins and pulmonary arteries**
- Dead space air is– **The air left in the bronchial tree**
- The ventilation movements of the lungs in mammals are governed by– **Diaphragm, Costal muscles**
- Pneumotaxic centre which can moderate the functions of the respiratory rhythm centre is present in– **Pons region of brain**
- Chemosensitive area of respiratory centre in medulla is affected by– **Excess CO_2 and H^+ ions**
- Rate of breathing is controlled mainly by– **CO_2 level in blood**
- The respiratory centre in the brain is stimulated by– **CO_2 concentration in arterial blood**
- The urge to inhale in humans results from– **rising pCO_2**
- Respiratory movements are controlled by– **Medulla oblongata**
- Pneumatic and inhibitory centres are associated with– **Breathing**
- Respiratory rhythm centre is situated in– **Medulla oblongata**

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- Receptors associated with aortic arch and carotid artery can recognise changes in– **CO_2, H+ concentration**
- Rate and depth of respiration shall increase when– **CO_2 concentration increases**
- Chemosensitive area of respiratory centre in medulla is affected by– **Excess CO_2 and H^+ ions**
- Carbon dioxide concentration in blood increases breathing becomes– **Faster and deeper**

14.6 Disorders of Respiratory System

- Occupational respiratory disorder is– **Silicosis**
- Carbon monoxide can kill a person because of it's extremely high affinity for– **Haemoglobin**
- Blood analysis of a patient reveals an unusually high quantity of carboxyhaemoglobin content. Which conclusions is most likely to be correct? The patient has been inhaling polluted air containing unusually high content of– **Carbon monoxide**
- During winter a person died during sleep, the room was closed and a container with burnt charcoal was found in the room. What may be the possible reason of his death– **Hb has more affinity to combine with carbon monoxide**
- Emphysema is a condition resulting from– **Cigarette smoking**
- Reduction in respiratory surface of the lungs due to break down of partition in the alveoli is known as– **Emphysema**
- Alveoli become enlarged and damaged with reduced surface area in heavy smokers. The condition is called– **Emphysema**
- Mill workers disease can be found– **Occupational respiratory disorders**
- Fibrosis may be caused due to– **Dust particles**
- Inflammation in bronchial muscle is known as– **Asthma**
- Emphysema is a– **Pulmonary disease**
- That disease due to flattening of tracheal vessels alveoli are deprived of oxygen– **Emphysema**
- Unrelated to emphysema– **Bronchoconstriction**
- A worker has been working in a coal mine for many years without wearing a mask. Probable observation will be– **Fibrosis in lung tissues**
- Characterized of respiratory disorder by inflammation of bronchi and bronchioles is– **Asthma**
- Chronic disorder in which alveolar wall are damaged due to which respiratory surface is decreased. One of the major causes of this is cigarette smoking– **Emphysema**

14.7 Miscellaneous

- The epithelial tissue present on the inner surface of bronchioles and trachea– **Ciliated**
- A large number of people are enclosed in a room then– **Oxygen decreases and CO_2 increases**
- The function of pleural fluid– **Reduces friction on the lung surface, Protection from external socks and Provide moisture**
- Respiration in insects is called direct because– **The cells exchange O_2/CO_2 directly with the air in the tubes**
- A person suffers punctures in his chest cavity in an accident, without any damage to the lungs its effect could be– **Cessation of breathing**
- It is known that exposure to carbon monoxide is harmful to animals because– **It reduces O_2 transport**
- A person breathes in some volume of air by forced inspiration after having a forced expiration. This quantity of air taken in is– **Vital capacity**
- Incidence of emphysema-a respiratory disorder is high in cigarette smokers. In such cases– **The alveolar walls are found damaged**
- Respiratory process is regulated by certain specialised centres in the brain. One of the following centres can reduce the inspiratory duration upon stimulation– **Pneumotaxic centre**
- In breathing movements, air volume can be estimated by– **Spirometer**
- The oxygen - haemoglobin dissociation curve will show a right shift in case of– **High pCO_2**
- Under normal physiological conditions in human being every 100 ml of oxygenated blood can deliver ..... ml of O_2 to the tissues. **5 ml**
- The partial pressure (in mm Hg) of oxygen (O_2) and carbon dioxide (CO_2) at alveoli (the site of diffusion) are– **pO_2 = 104 and pCO_2 = 40**
- Favourable conditions required for the formation of oxyhaemoglobin at the alveoli– **High pO_2, low pCO_2, less H^+, lower temperature**
- The Total Lung Capacity (TLC) is the total volume of air accommodated in the lungs at the end of a forced inspiration. This includes– **RV (Residual volume); ERV (Expiratory Reserve Volume); TV (Tidal Volume); and IRV (Inspiratory Reserve Volume)**
- Due to increasing air-borne allergens and pollutants, many people in urban areas are suffering from respiratory disorder causing wheezing due to– **Inflammation of bronchi and bronchioles**
- Tidal Volume and Expiratory Reserve Volume of an athlete is 500 mL and 1000 mL, respectively. What will be his Expiratory Capacity if the Residual Volume is 1200 mL. **1500 mL**

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EXAM POINT

Know about respiration and its organs	
The volume of air remaining in the lungs even after forcible expiration is– **Residual volume (RV)**	**TS EAMCET-11.05.2023, Shift-II**
The animals that possess non-elastic lungs with elastic air sacs connected to– **Birds**	**JIPMER-2015**
If you exhale multiple times into a conical flask containing lime water through a single inlet fixed through a stop cork, lime water will turn into– **Milky**	**KVPY SB & SX-2016**
Another name of the wind pipe is– **Trachea**	**JIPMER-2013**
Food and air pathway are divided at– **Pharynx**	**SRM JEEE-2018 VMMC-2010**
Stretch receptors of bronchi send information to inspiratory centre through– **Vagus nerve**	**VMMC-2015**
Common feature of human and insect tracheae is– **Non–collapsible wall**	**VMMC-2015**
In rabbit, the two fibro-elastic strands of the larynx extend between the– **Thyroid and arytenoid cartilages**	**AP EAMCET-2008**
Step of respiration are controlled by– **Enzymes**	**VMMC-2007**
Similar to spiracle of cockroach in man is– **Nostril**	**Manipal-2010**
Book lungs are respiratory organs of– **Arachnida**	**Haryana PMT-2011**
The process of exchange of O2 from the atmosphere with CO_2 produced by the cells is called– **Gaseous exchange**	**J&K CET-2014**
Skin is an accessory organ of respiration in– **Frog**	**CG PMT-2007**
In human beings, lungs are divided into– **3 right and 2 left lobes**	**MHT CET-2019, Manipal-2013**
When O_2 is inadequate during respiration, the condition is called– **Hypoxia**	**BVP-2000**
The percentage of carbon dioxide, oxygen and nitrogen in exhaled air of man are about– **4%, 16%, 79%**	**JIPMER-2011 / J&K CET-2011 Rajasthan PMT-2001**
Human respiratory structure	
Adam's apple is the mid ventral prominence of– **Thyroid cartilage**	**TS EAMCET 10.05.2023 Shift-I**
Respiratory bronchioles terminate into– **Alveolar ducts**	**AP EAMCET-12.07.2022 Shift-II**
Cavity lodging lungs is– **Thorax**	**AP EAMCET-03.09.2021 Shift-II**
Alveoli are lined by– **Squamous epithelium**	**TS EAMCET-09.08.2021 Shift-II**
Trachea is lined with incomplete rings of– **Hyaline cartilage**	**AP EAMCET-25.09.2020 Shift-II**
Arytenoid cartilage is found in– **Larynx**	**AP EAMCET-25.09.2020 Shift-I**
Pneumotaxic centre which can moderate the functions of the respiratory rhythm centre is present in– **Pons region in brain**	**JIPMER-2014**
The maximum number of oxygen molecules that can bind to one molecule of hemoglobin are– **4**	**KVPY (SA)-05.11.2017 / AFMC-2010, MGIMS Wardha-2009 / VMMC-2007, Rajasthan PMT-2005 / CG PMT-2009, 2004, J&K CET-2004 / UP CPMT-2002,**

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Right lung of rabbit is divided into– **Four lobes**	**Rajasthan PMT-2009**
Vocal cords occur in– **Larynx**	**MHT CET-01. 10. 2020 Shift-I / CG PMT - 2004, 2005 Haryana PMT-2003 / AMU-2001**
During inspiration, the diaphragm– **Contracts and flattens**	**BVP-2007, 2012 / VMMC-2012 / JIPMER-2009 Rajasthan PMT-2008 /CG PMT-2008 / Manipal-2008 Uttarakhand PMT-2008 / MGIMS Wardha-2006 Karnataka CET-2003 / AIPMT-1994**
Pulmonary vein carries– **Oxygenated blood**	**AFMC-2010**
The covering of the lung is called– **Pleura (Pleural membrane)**	**AP EAM CET-24.09.2020 Shift-II / WB JEE-2014 CMC Ludhiana-2010 / Punjab MET-2004 Manipal-2000 / AIPMT-1996**
The number of floating ribs in the human body is– **2 pairs**	**AMU-2007**
Mammalian lungs contain a large number of minute alveoli (air sacs). This allows to more surface area for– **Diffusion of gases**	**CG PMT-2006**
The structure of lungs that is directly involved in O_2 / CO_2 exchange between air and blood capillary is– **Alveoli**	**GUJCET-2011**
Occupational respiratory disorder is– **Silicosis**	**MHT CET-07.10.2020 Shift-I/ NEET-2018**
Adam's apple is also called– **Larynx**	**MHT CET-2018**
The function of surfactant are– **Facilitating lung expansion, Maintaining the stable size of the alveoli, and to reduce the surface tension on the alveoli**	**J&K CET-2012, WB JEE-2007**
A muscular transverse partition in mammals that separates thorax from abdomen is called– **Diaphragm**	**J&K CET-2005**
Surfactant in alveoli is secreted by– **Type II epithelial cells**	**Punjab MET-2011**
In man during inspiration air passes through– **Nasal chamber → Pharynx → Larynx → Trachea → Bronchi → Bronchioles → Alveoli**	**AP EAMCET-03.09.2021 Shift-II, AP EAMCET-2015 / Karnataka CET-2003**
The exchange of gases in the alveoli of the lungs takes place by – **Simple diffusion**	**VMMC-2002, 2015/ AP EAMCET-2011, JIPMER-2011 / Punjab MET-2010, JCECE-2006 / BCECE-2005**
Breathing Mechanism	
Sequence of the air passage in man is –**External Nares → Nasal chamber → Pharynx → Larynx → Trachea → Bronchi → Bronchioles → Alveoli**	**AP EAPCET-23.05.2023, Shift-II**
Vital capacity of lung is– **Inspiratory reverse volume (IRV) + Expiratory reverse volume (ERV) + Tidal volume (TV)**	**NEET (UG) 07.05.2023**

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According to Boyle's law the product of pressure and volume is a constant. Hence– **If volume of lungs is increased, the pressure decreases proportionately**	**MGIMS Wardha-2013, Karnataka CET-2010**
The inhibitory process of respiratory centre in brain that regulates the extent of inspiration is known as– **Hering-Breuer reflex**	**SRM JEEE-2018**
Possibility for most of us in regard to breathing by making a conscious effort is– **One can consciously breathe in and breathe out by moving the diaphragm alone, without moving the ribs at all.**	**AIPMT (Mains)-2011**
In lungs, air is separated from venous blood by– **Squamous epithelium and endothelium of blood vessel**	**CMC Vellore-2007**
During expiration diaphragm becomes– **Dome shaped**	**VMMC-2008, AMU-2008**
Apnea is– **Absence of breathing**	**CMC Vellore-2014, Tripura JEE-2018**
When CO_2 concentration in blood increases, breathing becomes– **Faster and deeper**	**AIPMT-2004 / Assam CEE-2014, CMC Vellore-2012 /CMC Ludhiana-2009, JCECE-2009 / AFMC-2008**
During which process the intrapulmonary pressure is less than the atmospheric pressure – **Inspiration**	**AMU-2015**
During forced expiration, actively contracting muscles include the– **Abdominal muscles**	**BCECE-2011**
The muscles that contract during inspiration is– **External inter-costal muscle and the diaphragm**	**UP CPMT-2010, AIPMT-1995**
In the process of respiration, the potential energy stored in organic compounds is released in the form of– **Chemical energy**	**BHU PMT-2001**
On high mountains, difficulty in breathing is due to– **Decrease in partial pressure of O_2**	**JIPMER-2006, MGIMS Wardha-2005**
Between breaths, the intra pleural pressure is approximately …….. mm Hg less than atmospheric pressure. **4**	**AMU-2010**
The nerve related with diaphragm is– **Phrenic**	**CG PMT-2006**
Rate of breathing is directly affected by– **Concentration of CO_2**	**BVP-2011, Uttarakhand PMT-2011**
The total amount of air can be inspired or expired during normal breathing– **0.5 L/500ml**	**BVP-2004**
Events that occur during inspiration– **Contraction of diaphragm, Contraction of external inter-costal muscles**	**NEET-2020 Phase-I**
Lungs do not collapse between breaths and some air always remains in the lungs which can never be expelled because– **Pressure in the lungs is higher than the atmospheric pressure**	**NEET-2016 Phase-II**
The partial pressure of oxygen in the alveoli of the lungs is– **More than that in the blood**	**NEET-2016 Phase-II**
Left auricle and left ventricle in higher vertebrates is called – **Systemic heart**	**AIPMT-2003**
When 1500 mL air in the lungs, it is called– **Residual volume**	**Manipal-2001, Haryana PMT-2000, AIPMT-1996**
Rate of breathing is controlled by– **Carbon dioxide**	**CMC Vellore-2008**
The diaphragm get flattened and ribs get raised during – **Inspiration**	**Rajasthan PMT-2001**
To generate pressure gradients to facilitate expiration and inspiration, the human body uses the intercostal muscles and– **Diaphragm**	**Kerala PMT-2014**

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Respiratory Volume and Capacities	
Under normal physiological conditions in human being every 100 ml of oxygenated blood can deliver ———— ml of O_2 in to the tissues. **5 ml**	**NEET-2022**
The partial pressures (in mm Hg) of oxygen (O_2) and carbon dioxide (CO_2) at alveoli (the site of diffusion) are– **pO_2 = 104 and pCO_2 = 40**	**NEET-2021**
VC (Vital capacity) is– **IC+ERV**	**GUJCET-2018**
The amount that volume of air is in lungs FRC– **2100 ml to 2500 ml**	**GUJCET-2015**
Whether a child died after normal birth or died before birth can be confirmed measuring– **Residual volume of air**	**Karnataka CET-2008**
Total Lung Capacity (TLC) can be calculated by the–	**TS EAMCET-02.05.2018 Shift-II, TS EAMCET-12.05.2017**
The Expiratory Reserve Volume (ERV) will be– **1100 mL in males and 800mL female**	**MHT CET-2019 / UP CPMT-2013, UP CPMT-2011 / Punjab MET-2004, Manipal-2000**
Given that tidal volume is 600 ml, inspiratory reserve volume is 2500 ml, and expiratory reserve volume is 800 ml, the value of vital capacity of lung is– **3900 ml**	**KVPY (SA)-05.11.2017**
Residual volume is– **Greater than tidal volume**	**Karnataka CET-2007**
After a deep inspiration and maximum expiration, the capacity of lung is known as– **Vital capacity**	**TS EAMCET-9.8.2021 Shift-I / NEET (Odisha)-2019, AP EAMCET-2011 / JIPMER-2008, WB JEE-2006 / UP CPMT-2004 / Punjab MET-1999**
Disease aggravated by pollution is– **Bronchitis**	**Haryana PMT-2003**
The volume of air inspired or expired during normal respiration is called– **Tidal volume**	**GUJCET-2014 / KVPY (SA)-2011, J&K CET-2003, 2010 / AFMC-2010, DUMET-2007 / WB JEE-2006**
The volume of Anatomical Dead Space air is normally– **150 mL**	**AIIMS-2016 / WB JEE-2012, JIPMER-2011 / J&K CET-2011**
Vital capacity of lungs is– **IRV + ERV + TV**	**WB JEE-2012 / Punjab MET-2011, MGIMS Wardha-2008 / DUMET-2008, DUMET-2007 / CG PMT-2005, Punjab MET-2003 / Karnataka CET-2002, BVP-2000**
The volume of air that will remain in the lungs after a normal expiration is called– **Functional residual capacity**	**Kerala PMT-2015**
Total lung capacity minus residual volume in our lungs is **– Vital capacity**	**BHU PMT (Screening)-2010, AI PMT-2008**
The volume of air which remains in the conducting airways and is not available for gas exchange is called– **Anatomic dead space**	**J&K CET-2012**

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Amount of air remains after deep breathing is called– **Residual volume**	**KVPY (SA)-2020, J&K CET-2015**
Lungs are made up of air-filled sacs the alveoli. They do not collapse even after forceful expiration, because of– **Residual Volume**	**NEET-2017**
The order of increasing volume is– **Tidal volume, Residual volume,**	**AP EAMCET-28.04.2017 Shift-I, Punjab MET-2007 / AIIMS-2007**
The volume of air inspired or expired by a healthy man per minute is–	**Karnataka CET-2017 / DUMET-2003, Rajasthan PMT-2001**
ERV + RV = ? for lungs– **FRC (Functional Residual Capacity)**	**BCECE-2015**
The largest quantity of air that can be expired after a maximum inspiratory effort is– **Vital capacity of lung**	**WB JEE-2007**
The volume of air that can be breathed in by maximum forced inspiration over and above the normal inspiration is called–	**WB JEE-2014**
Clinical assessment of the pulmonary functions is measured by **–** **Spirometer**	**AP EAPCET-12.07.2022 Shift-I**
Respiratory Quotient	
When pulses, the rich sources of proteins, are used as respiratory substrate than RQ obtained is– **Less than one**	**MHT CET-08.10.2020 Shift-I**
Chloride shift is essential for the transportation of– **CO_2**	**CG PMT-2010**
Unloading of oxygen from haemoglobin at the site of diffusion is facilitated by–	**BVP-2013**
Ratio of CO_2 produced to O_2 consumed– **RQ (Resipiratory Quotient)**	**Tripura JEE-2018, AIIMS-2014**
Haemoglobin is a– **Globular protein**	**Manipal-2012**
When Respiratory Quotient (RQ) is less than 0.1 in a respiratory metabolism, it means that– **Volume of carbon dioxide evolved is less than**	**J&K CET-2014**
Respiratory quotient of glucose is– **1.0**	**Karnataka CET-2022 / JIPMER-2018, Manipal-2013 / BVP-2006**
If organic acids are used as substrate what will be the value of R.Q– **> 1**	**Rajasthan PMT-1998**
Dissociation curve shifts to the right when– **CO_2 concentration increases**	**CG PMT-2007**
The percent concentration of carbondioxide in the alveolar air is– **5.3**	**AP EAMCET-2004**
Compound double in water does not impede oxygen transporation is– **SO_2**	**VMMC-2015 / Haryana PMT-2002**
Most of the carbon dioxide is transported in blood is– **Carbaminohaemoglobin**	**AIIMS-26.05.2018 Shift-I / AIIMS-2013, UP CPMT-2012 / CG PMT-2009, CG PMT-2008 / Rajasthan PMT-2008, WB JEE-2007 / JCECE-2007, AFMC-2006 / Haryana PMT-2000**

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Protein is used as respiratory substrate only when– **Carbohydrates and fats are exhausted**	**Manipal-2013**
If RQ is 0.6 in a respiratory metabolism. It would mean that–	**CMC Vellore-2008**
Hamburger shift is called– **Chloride shift**	**BVP-2009**
Failure of ventilation of lungs is known as **–** **Oxygen toxicity**	**Manipal-2008**
The respiratory quotient (RQ) of a germinating castorseed is– **Less than one**	**BVP-2014 / MGIMS Wardha-2007, 2012, AMU-2007 / Rajasthan PMT-2003, Rajasthan PMT-1999**
When fats are respiratory substrate, the value of R.Q. would be about– **0.7**	**AMU-2012**
Transport and exchange of gases	
The factors favorable for increase of binding affinity of oxygen with haemoglobin– **High pO_2, low pCO_2, low H and lower temperature**	**AP EAPCET-22.05.2023, Shift-I**
Bulk of carbon dioxide (CO_2) released from body tissues into the blood is present as– **Bicarbonate in blood plasma and RBCs**	**AIPMT (Mains)-2011**
Respiratory centre in brain occurs in – **Medulla oblongata**	**AP EAMCET-25.09.2020 Shift-I / Punjab MET-2010, AIIMS-2009 / Rajasthan MPT-2001, 2005, 2006, Karnataka CET-2005 / Haryana PMT-2003, Manipal-2001**
Bicarbonates formed inside erythrocytes passes out into plasma while chloride of plasma pass into erythrocytes. The phenomenon is called–	**CMC Vellore-2014, 2007**
Oxyhaemoglobin dissociates into oxygen and deoxyhaemoglobin at–	**VMMC-2008**
100 mL of blood can carry CO_2 equal to– **3.7 mL**	**VMMC-2015 / WB JEE-2012**
Partial pressure of oxygen in the inspired and the expired air is respectively–	**VMMC-2015**
Hemoglobin is having maximum affinity with– **CO**	**TS EAMCET-08.05.2019 Shift-II / JIPMER-2011, Rajasthan PMT-2009 / CMC Vellore-2009, Punjab MET-2009 / UP CPMT-2009, CG PMT-2004 / BCECE-2004, AMU-2003, 2001**
The percentage of CO_2 is transported by RBCs is– **20 - 25%**	**VMMC-2011**
Partial pressures of oxygen and carbon dioxide in healthy human lung alveoli are respectively, nearest to– **104 and 40 mm of Hg**	**TS EAMCET-02.05.2018 Shift-I / AMU-2015**
The sets that of conditions promotes the dissociation of oxygen from haemoglobin– **LowpO_2, high pCO_2, high H^+**	**TS EAMCET-30.07.2022 Shift-II / NEET-2021, AP EAMCET-24.04.2019 Shift-I, AP EAMCET-25.04.2018 Shift-I, AMU-2015 / AP EAMCET-2013**

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The enzyme carbonic anhydrase takes part in CO_2 transport is found in–	**UP CPMT-2012**
Relative Biological Effectiveness (RBE) usually refers to the damages caused by– **Radiation**	**AFMC-2007**
In man hemoglobin combines with CO instead O_2 and the product cannot dissociate is caused by – **CO poisonous**	**HP CET-2011 / BCECE-2006, VMMC-2005 / AMU-2004 / BVP-2003**
The change in the partial pressure of CO_2 in blood is determined by–	**AMU -2000**
If levels of carboxy haemoglobin in blood reaches up to ..... the functioning of central nervous system is severly affected which causes death. **0.1 to 5%**	**Manipal-2015**
Oxyhaemoglobin dissociates into oxygen and deoxyhaemoglobin at–	**AMU-2008**
CO_2 is carried in blood as– **Bicarbonate Ions**	**VMMC-2012 / UP CPMT-2012, 2008, VMMC-2008 / AMU-2008, MGIMS Wardha-2008 / BCECE-2005, Rajasthan PMT-1998, 2003 / AIIMS-1998**
O_2 content in the air we expire is– **16.4%**	**Haryana PMT-1999**
About 97% of O_2 is transported by RBC. The remaining 3% is–	**Kerala PMT-2012 / Kerala PMT-2008**
The enzyme essential for the transport of CO_2 as bicarbonate in blood is–	**KVPY (SA)-2020, Kerala PMT-2012**
Bohr effect is related with– **Reduced oxygen level in haemoglobin**	**AIIMS-1995**
Oxygen dissociation curve of haemoglobin is– **Sigmoid**	**TS EAMCET-28.09.2020 Shift-I / JIPMER-2017, Kerala PMT-2014 / UP CPMT-2009, Punjab MET-2009 / Rajasthan PMT-2009, DUMET-2007 / BCECE-2007**
When temperature deceases oxy-Hb curve will become– **More steep**	**KVPY SB & SX-2016 / AIIMS-2010, UP CPMT-2007**
When a man inhales air containing normal concentration of O_2 as well as CO he suffers from suffocation because–	**MHT CET-2018 / BVP-2012, AIIMS-2008 / Rajasthan PMT-1999**
A person sitting at rest experiences a temporary cessation of breathing after forced deep breathing for a few minutes. This is due to–	**AIIMS-2014**
Oxygen binding to haemoglobin in blood is Inversely proportional to –	**AIIMS-2012**
CO_2 combines with Hb to form– **Carbaminohaemoglobin**	**AIIMS-26.05.2018 Shift-II**
How does the transport of O_2 and CO_2 by blood happens–	**BCECE-2015 / Rajasthan PMT-2001, AIPMT-1996 / AIPMT-1993**
At high altitude, the RBCs in the human blood will– **Increase in number**	**AIPMT-1995**
Although much CO_2 is carried in blood, yet blood does not become acidic, because– **In CO_2 transport, blood buffers play an important role**	**AIPMT-1995**

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The curve that shows, how oxygen is loaded and unloaded due to partial pressure is– **O_2 dissociation curve**	**JCECE-2002**
CO_2 carried from the tissue cells in the blood is in the form of–	**MHT CET-2019**
Oxygen is transported by– **RBC**	**CG PMT-2005**
Left shift of oxyhaemoglobin curve is noticed under–	**TS EAMCET-08.05.2019 Shift-I, JCECE-2012**
Maximum amount of oxygen is exchanged from the blood in the–	**BCECE-2012 / Karnataka CET-2005**
Hamburger shift is called– **Chloride shift**	**Karnataka CET-2013 / VMMC-2009**
In lungs, the air is separated from the venous blood through–	**AP EAPCET-07.09.2021 Shift-I**
Regulation of respiration	
People generally suffer nausea, fatigue, heart palpitations etc. at high altitudes like Rohtang pass due to changes in– **Pressure Oxygen**	**TS EAMCET-10.05.2023, Shift-II**
The pCO_2 of alveolar blood is _____ mmHg.– **45**	**MHT CET-06.10.2020 Shift-I**
The faster breathing in high fever is due to the–	**JIPMER-2015**
The oxygen toxicity is related with– **Failure of ventilation of lungs**	**BVP-2012 / BVP-2007, MGIMS Wardha-2006**
Pneumotaxic center is present in– **Pons varolii**	**BCECE-2008**
Which disease is caused by a variant of the common cold virus (corona virus)–	**Haryana PMT-2004**
Inflammation of bronchi and bronchioles is called – **Asthma**	**WB JEE-2006 / AP EAMCET-25.09.2020 Shift-II, NEET-2016 Phase-I**
The respiratory centre in the brain is stimulated by–	**AIPMT-2015 / J&K CET-2013, AIIMS-2001 / Rajasthan PMT-2001**
Respiratory's disorder	
The respiratory disorder causes recurrent alveolar hemorrhage is–	**AP EAMCET-11.07.2022 Shift-II**
Chronic Obstructive Lung Disease (COLD) is a condition due to–	**SRM JEEE-2019 / NEET-2018, AIPMT (Re-Exam)-2015**
Occupational lung diseases that occurs in humans is–	**AP EAMCET-24.09.2020 Shift-II, JIPMER-2015 / VMMC-2013**
Respiratory disorders occur due to automobile exhaust because of the release of –	**BHU PMT (Screening)-2011**
Lung tuberculosis is caused by– **Mycobacterium tuberculosis**	**CMC Ludhiana-2015 / DUMET-2009**
The state, during which the respiratory centre is inhibited, is termed as.	**AIIMS-1994 / WB JEE-2011**
Aspergillosis is a disease of– **Lungs**	**BVP-2001 / Manipal-2002**
When the blood contains a high percentage of CO_2 and a very low percentage of O_2, the breathing stops and the person becomes unconscious. This condition is known as– **Asphyxia**	**Karnataka CET-2011**
Congestion of the lungs is one of the main symptoms in– **Heart failure**	**Kerala PMT-2011**
Maximum amount of energy/ATP is liberated on oxidation of– **Fats**	**JCECE-2004**

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15.
BODY FLUIDS AND CIRCULATION

15.1 Blood

- Most abundant phagocytic cell of blood is– **Neutrophil**
- Natural anticogulant in human body is secreted by– **Basophils**
- _____ blood protein play a major role osmotic balance. **Albumin**
- WBC are the most abundant and least in number respectively– **Neutrophils and basophils**
- Heart beats are accelerated by– **Sympathetic nerves system and epinephrine**
- Both pulmonary and renal arteries are common regarding– **Have thick walls and narrow lumen**
- Cell of blood secrete histamine, serotonin and heparin– **Basophil**
- WBC is associated with resistance of infection and allergic reaction– **Eosinophils**
- Substance initiate clotting of blood is– **Thromboplastin**
- Amount of blood pumped by right ventricle per minute is– **Approximately 5 litre**
- In the blood generally (reference is number)– **WBC < RBC**
- RBCs are placed in distilled water, the corpuscles will– **Burst**
- Fibrin is formed from fibrinogen due to the activity of– **Active thrombin**
- The difference between blood and lymph– **Blood has both RBCs and WBCs while lymph has only WBCs**
- Blood without fibrinogen and corpuslces is called – **Serum**
- The walls of capillaries are composed of endothelium which is– **Squamous epithelium**
- Tunica external is composed of– **Connective tissue**
- Responsible for ABO blood grouping– **Presence or absence of two surface antigens (A and B) on the RBCs.**
- When the blood of a foetus is agglutinated by its mother's Rh antibodies, then _____ condition arises as a severe anaemia. **Erythroblastosis foetalis**
- _____ plays an important role in blood clotting. **Calcium**
- Persons with 'AB' blood group are called as "Universal recipients". This is due to– **Absence of antibodies, anti-A and anti-B, in plasma**
- Adult human RBCs are enucleate. The feature is– **All their internal space is available for oxygen transport**
- Name the blood cells, whose reduction in number can cause clotting disorder, leading to excessive loss of blood from the body– **Thrombocytes**
- Serum differs from blood in– **Lacking clotting factors**
- The pair of substances among the ..... is essential for coagulation of blood. **Calcium ions and platelet factors**
- The colour of plasma is– **Pale yellow**
- pH of blood– **Ranges between 7.35 to 7.45**
- An agranulocyte is– **Lymphocyte**
- In a healthy adult man, the type of leucocytes responsible for immune response are– **Lymphocytes**
- WBCs are– **Colourless, Generally short lived**
- A certain road accident patient with unknown blood group needs immediate blood transfusion. His one doctor friend at once offers his blood without checking for blood group compatibility. What could be the blood group of the donor– **Blood group O**
- ..... blood groups which is an universal recipient in blood transfusion. **AB**
- Anti-A and Anti-B antibodies are not found in ..... blood group. **AB**
- Clumping of RBC may occur when blood of one person is mixed with serum or blood of another person. This is due to– **Antigen-antibody reaction**
- Blood of AB group cannot be given to B group patient because– **Anti-A antibodies**
- A drop of each, is placed separately on four slides. ..... will not coagulate. **Blood serum**
- Safe blood transfusion is– **The recipient's serum should not contain the antibodies against the RBCs of the donor**
- Detection of blood groups is done by agglutinisation test using antiserum. According to this method, if the blood shows coagulation with– **Antiserum B, blood group is B**
- As per the guidelines of the Indian Red Cross Society, the persons is recommended for blood donation– **Persons who are immunised with live vaccines**

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- No antigens but both a and b antibodies are present in which blood group– **Blood group 'O'**
- In which situations, there is a risk factor for children acquiring erythroblastosis fetalis– **Mother is Rh –ve and father is Rh +ve**
- Mother-fetus Rh blood type incompatibility disorder can occur if the mother is ..... and her fetus is ..... **Rh negative; Rh positive**
- Prothrombin, responsible for clotting of blood, is released by– **Blood platelets**
- Removal of calcium from freshly collected blood will- **Prevent clotting**
- If A is thrombin, B is thrombokinase, C is fibrin and D is occlusion of clot by formed elements, then the correct sequence of involvement in blood clotting is– **B → A → C → D**
- A reduction in number of platelets can lead to– **Clotting disorder, Excessive loss of blood**
- Number of thrombocytes present mm^{-3} of blood is– **1,50,000 – 3,50,000**
- Clotting of blood is not related to– **Na^+ of the plasma**
- Essential coagulation for blood is– **Ca**
- A healthy person contains haemoglobin in every 100 ml of– **12 - 16 g**
- Least abundant leukocyte is– **Basophil**
- Life span of RBC is– **120 days**
- Clot is a web of– **Fibrin with blood cell trapped**
- The type of white blood cells are concerned with the release of histamine and the natural anticoagulant heparin– **Basophils**
- Most commonly used body fluid is– **Blood**
- Rh incompatibility observed between– **Rh -ve mother and Rh +ve foetus**
- In an accident there is great loss of blood and there is no time to analyse the blood group. Which blood can be safely transferred– **O and Rh negative**
- An individual has O blood group if his/her blood sample– **Does not clump when either antiserum A or antiserum B is added**
- ..... is absent on blood. **Fibroblast**
- Percentage of plasma is present in the blood– **55%**
- Blood clotting involves the conversion of– **Fibrinogen to fibrin**
- Number of RBC/mm^{-3} in healthy female is– **5.0 - 5.5 million**
- Blood needed for clotting– **Fibrinogen**
- Average life span of RBCs– **120 days**
- Most abundant WBC is– **Neutrophils**
- Rh factor occurs in– **Man and Rhesus monkey**
- Colour of leucocytes– **Colourless**
- Factors present on surface of RBC related to heredity are– **Antigens**
- A mismatch during transfusion of blood causes– **Agglutination**
- Plasma proteins perform– **Nutritive function, Physiochemical function, Transport function**
- WBCs are involved in allergic reactions– **Eosinophils**
- Important phagocyte is– **Monocyte**
- Platelets are produced from which of the cells– **Megakaryocytes**
- Blood groups are not compatible during blood transfusion, reason of– **Destruction of RBCs**
- A person with blood group A requires blood. The blood group which can be given is– **A and O**
- Husband and wife should know their Rh factors because the situation can be serious due to biological incompatibility in one of the following cases– **Rh^+ husband and Rh^- wife**
- Approximately what percentage of people are Rh positive– **80%**
- Number of leucocytes present in one mm^{-3} of blood is– **6000-8000**
- ..... does not happen to the baby during erythroblastosis fetalis. **High erythrocyte count**
- Largest corpuscles of mammalian blood are– **Monocytes**
- Problem related to Rh factor arises when Rh^+ and Rh^- bloods mix up– **During pregnancy, Through transfusion**
- Prothrombin present in– **Plasma**
- Antibodies in plasma of an individual of blood group AB is– **No antibodies**
- ..... blood groups will be having antigen A or RBC surface. **A, AB**
- Universal acceptor is having antibodies– **No antibodies**
- Type of tissue is blood– **Specialized connective tissue**
- Major protein of plasma is not a– **Keratin**
- If ..... are removed from plasma, serum is left. **Clotting factors**
- Most abundant formed element of blood is– **RBC**
- Plasma protein is mainly concerned with immunity– **Globulin**
- Organ which is considered as graveyard of RBCs– **Spleen**
- Phagocytic granulocyte in blood is– **Neutrophil**
- P is an agranulocytic WBC, least in number and Q is a granulocytic WBC, least in number. P and Q are respectively– **Monocytes and Basophils**

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- Platelets are formed by ..... P ..... of special cells in ..... Q ..... **P - Fragmentation, Q - Bone Marrow**
- Severe reduction in platelets in body results in– **Bleeding at multiple sites**
- Fibrinogen $\xrightarrow{A}$ Fibrin. A is– **Thrombin**
- Cascade process during coagulation of blood results in the formation of an enzyme complex, known as– **Thrombokinase**
- Thrombokinase is associated with– **Enzymatic reactions in coagulations of blood**
- If mother is Rh -ve and father is Rh +ve, condition of erythroblastosis foetalis may occur, this condition may be avoided by administrating anti-Rh antibodies to– **Mother, just after the birth**
- Special body fluids for circulation and exchange of nutrients and waste between cells and surroundings, are found in– **Complex multicellular organisms**

15.2 Lymph (Tissue Fluid)

- Lymph is modified blood that contains– **All contents of blood except RBC**
- Blood pressure in the pulmonary artery is– **More than that in the pulmonary vein**
- Migration of WBCs into the tissue spaces from blood capillaries is called – **Diapedesis**
- Most of our cells are surrounded by– **Interstitial fluid**
- The lymph serves to– **Return the interstitial fluid to the blood**
- Compared to blood our lymph has– **More WBCs and no RBCs**
- All components of blood expect RBCs and some proteins is called – **Lymph**
- The lymph differs from the blood in having– **No RBC less WBC**
- Lymph is also known as– **Tissue fluid**
- Serum is– **Plasma minus corpuscles**
- Lymph ultimately release the absorbed substances into– **Bloodstream (veins)**
- Lymph can be defined as– **Blood minus RBC & Platelets**
- Lymph's Colour is– **Colourless**
- Functions of lymph is – **Absorption of fats, Exchange of nutrients and hormones**

15.3 Circulatory Pathways

- Purkinje fibres is a network of– **Neuromuscular fibres found only in ventricle wall**
- Glucose from the digestive tract is transported to liver by– **Portal vein**
- ____ component of conduction pathway of heart is responsible for maintaining the contractile activity of the heart– **SA node**
- The vessel carrying minimum quantity of excretory waste product in blood is– **Renal vein**
- SA node is stimulated by sympathetic nerve than the– **Rate of heart beat and cardiac output increases**
- Amount of blood pumped out by each ventricle in one minute is called– **Cardiac output**
- The cardiac output of a person whose pulse rate is 60/minute and stroke volume 70 ml is– **4.2 lit/minute**
- 'Dub' sound in heart beat is produced when– **Closure of semilunar value**
- The amount of blood that passively flows from atria to ventricles is (in man)– **70-75%**
- A vein differs from the artery in having– **Valves to control direction of flow**
- Systemic heart comprises of– **Left ventricle to right auricle**
- In heart, automatic rhythmic impulse generation capability is present in the– **S.A. node, A.V. node and Bundle of His**
- Stimulation of sympathetic nerves of the heart accelerates it through– **Release of noradrenalin**
- Which receives impure blood from heart musculature via coronary veins– **Coronary sinus**
- Oxygenated blood is pumped into the aorta and deoxygenated blood is pumped into the pulmonary artery– **Ventricular systole**
- First heart sound is– **'Lub'; Ventricluar systolic**
- Maximum amount of blood is transferred from atrium to ventricle in cardiac cycle during– **Joint diastole**
- Time interval between the closure of semilunar valve and after that closure of AV valve is– **0.5 s**
- Structures are directly involved in the "systemic circulation"– **Left ventricle, aorta and inferior vena cava**
- Nodal tissue/musculature in human heart has– **Purkinje fibres throughout the ventricular musculature**
- The opening of auricles into ventricles on the right side is guarded by– **Tricuspid valve**
- 'Bundle of His' is a part of _____ organs in humans– **Heart**
- Sino-atrial node in human heart is embedded in the wall of– **Right atrium**
- To prevent backflow of blood into the left ventricle is the function of – **Valve**
- The first heart sound is– **'Lub' sound produced at the beginning of systole**
- Blood moves freely from atrium to the ventricle during joint diastole– **True**
- The QRS complex in a standard ECG represents– **Depolarisation of ventricles**

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- A phase/event in cardiac cycle in a standard electrocardiogram– **QRS complex indicates ventricular contraction**
- The size of both ventricles > the size of both atria is found in the – **Human heart**
- ..... chambers of the heart has the thickest muscular wall. **Left ventricle**
- Heart pumps blood more forcefully in older persons than younger ones due to– **Decrease in elasticity of arteries**
- Pacemaker is situated in the– **Wall of right atrium**
- Chordae tendineae are found in– **Ventricles of heart**
- Blood enters the heart because muscles of the– **Atrium relaxes**
- Oxygenated blood is pumped into the aorta and deoxygenated blood is pumped into the pulmonary artery during– **Ventricular systole**
- If due to some injury the chordae tendineae of the tricuspid valve of the human heart is partially non-functional, the immediate effect will be– **The flow of blood into the pulmonary artery will be reduced**
- A red blood cell, entering the right side of the heart passes through ..... the structures. **SAN, Right atrium, Atrioventricular valves, Right ventricle, Semilunar valves**
- When the pacemaker becomes non-functional , its happens– **Cardiac muscles do not undergo co-ordinated rhythmic movements**
- The statement about the human heart is true– **The second heart sound is due to the closing of the semilunar valves**
- In a cardiac output at 5250 ml. per minute, with 75 heartbeats per minute, the stroke volume is– **70 ml**
- In a standard ECG, a patient is connected to the machine with three electrical leads– **True**
- QRS is related with– **Ventricular contraction**
- 2 and 4 chambered hearts are respectively found in– **Fishes and crocodiles**
- During ventricular diastole– **The ventricles relax**
- A type of circulatory system in which blood pumped by the heart passes through large vessels into open spaces or body cavities called sinuses is called– **Open circulatory system**
- During recording electrocardiogram, patient is connected to 3 electrical leads. These position are– **Both wrists and left ankle**
- An open circulatory system occurs in– **Insects**
- Mitral valve guards the opening between– **Left atrium and left ventricle**
- Arteries carry oxygenated blood except– **Pulmonary artery**
- Pacemaker of heart is– **SA node**
- Closed type of circulatory system is– **Fish**
- In an ECG, the depolarization of ventricles is indicated by– **QRS complex**
- The heart of an amphibian is usually– **Three chambered**
- Heart beat is initiated by– **SA node**
- In the heart of man the bicuspid valve is situated between– **Left auricle and left ventricle**
- Which prevents backward flow of blood during contraction– **Valves in heart**
- The opening between the left atrium and the left ventricle known as– **Mitral valve**
- Duration of cardiac cycle is– **0.8 sec**
- Cardiac output is determined by– **Heart rate, Stroke volume**
- Oxygenated blood is carried by– **Pulmonary vein**
- Pulmonary veins are those which– **Carry pure blood from lungs to heart**
- Contraction of heart is called– **Systole**
- The 'Lub' and "Dub" heart sound are due to– **Closing of heart valves**
- The P-wave represents the– **Contraction of both the atria**
- The return of the ventricles from excited to normal state is represented by– **T-wave**
- Heart of heart is– **SA node**
- Term does not apply to human heart– **Neurogenic**
- The rate of the heart and their conduction is represented in the pathway– **SAN - AVN - Bundle of His - Purkinje fibres**
- Wall of heart is covered externally by– **Pericardium**
- Open circulatory system is present in– **Arthropods, Molluses**
- The typical Lub-Dub sounds heard in the heart beat of a healthy person are due to– **Closing of the tricuspid, Bicuspid and semilunar valves**
- Closure of ..... makes dub sound of heart beat. **Semilunar valve**
- Human heart is derived from– **Mesoderm**
- Contraction of right ventricle pumps blood into– **Pulmonary artery**
- Amino acids are transported from the intestine to liver by– **Hepatic portal vein**
- Coronary sinus carries _____ to the right atrium. **Deoxygenated blood**

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15.4 Double Circulation

- _____ provides nutrients and oxygen to cardiac muscle tissue. **Coronary circulation**
- ..... parts of heart first receives deoxygenated blood. **Right auricle**
- In which of the points pulmonary artery is different from pulmonary vein– **Its wall is thick**
- Right atrium receives blood from– **Superior and inferior vena cava**
- Arteries are best defined as the vessels which– **Carry blood away from the heart to different organs**
- All veins carry deoxygenated blood except– **Pulmonary vein**
- In veins, valves are present to check backward flow of blood flowing at– **Low pressure**
- Blood circulation that starts in capillaries and ends in capillaries is called– **Portal circulation**
- Hepatic portal system carries blood from– **Intestine to liver**
- In double circulatory system, the function of veins is to carry– **De-oxygenated blood**
- Incomplete double circulation is found in– **Amphibian**
- Double circulatory system means that blood– **Passes two times through heart**
- Functions of double circulation– **Systemic circulation of nutrients and gases**

15.5 Regulation of Cardiac Activity

- During each cardiac cycle is– **The volume of blood pumped out by the Rt (Right) and Lt (left) ventricles is same**
- Cardiac activity could be moderated by the autonomous neural system. When the– **Sympathetic system stimulates heart rate and stroke volume**
- Hormonal regulation of cardiac activity involves the hormones ..... and ....., secreted by the ..... **Epinephrine, norepinephrine, medulla of adrenal gland**
- A special neural centre that regulates the cardiac function through ANS is located in– **Medulla oblongata**
- Parasympathetic neural signals can– **Decrease the rate of heart beat, Decrease the cardiac output**
- Sympathetic nerves can– **Increase the strength of ventricular contraction, Increase the cardiac output**

15.6 Disorders of Circulatory System

- Complete stoppage of heart beat is known as– **Cardiac arrest**
- Coronary artery disease (CAD) is often referred to as– **Atherosclerosis**
- Angina occurs due to conditions that affects the – **Blood flow**
- Increase in blood pressure is– **Hypertension**
- CAD also known as– **Atherosclerosis**
- Hypertension indicates– **140/90**
- The deposition of calcium, fat, cholesterol and fibrous tissues makes the lumen of arteries narrower due to– **Coronary artery disease**
- The disease erythroblastosis foetalis of human baby is due to– **Incompatibility of blood group of embryo and mother**
- ..... these diseases make the lumen of arteries narrower. **Atherosclerosis**
- High blood pressure leads to heart diseases and also affects vital organs such as– **Brain, Kidney, Arterial blood vessels**
- In which condition, heart is unable to supply blood to body tissues sufficiently– **Heart attack**

15.7 Miscellaneous

- ..... cells do not exhibit phagocytic activity. **Basophil**
- One of the common symptoms observed in people infected with dengue fever is– **Significant decrease in platelets count**
- ECG depicts the depolarisation and repolarisation processes during the cardiac cycle. In the ECG of a normal healthy individual one of the following waves is not represented– **Repolarisation of atria**
- Type of cells lack nucleus in hormones– **Erythrocytes**
- Blood cells is involved in antibody production is– **B-lymphocytes**
- The cells involved in inflammatory reactions are– **Basophils**
- The second heart sound (dub) is associated with the closure of– **Semilunar valve**
- Cardiac output of a person having 72 heart beats per minute and a stroke volume of 50 ml– **3600 mL**
- Enzyme is responsible for the conversion of inactive fibrinogens to fibrins– **Thrombin**
- Persons with 'AB' blood group are called as "Universal recipients". This is due to– **Absence of antibodies, anti-A and anti-B, in plasma**
- The QRS complex in a standard ECG represents– **Depolarisation of ventricles**
- Associated with decrease in cardiac output is– **Parasympathetic neural signals**
- Conditions cause erythroblastosis foetalis– **Mother Rh^{-ve} and foetus Rh^{+ve}**

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EXAM POINT

The blood and its Composition		
Life span of blood platelets is–	**5 – 9 days**	**AP EAPCET-22.05.2023, Shift-I MHT CET -04.10.2020 Shift I**
The majority of the Rh antibodies produced by the mother in Erythroblastosis foetalis are–	**IgG**	**AP EAPCET-23.05.2023, Shift-I**
Colour of oxyhaemoglobin molecule is–	**Bright red**	**Haryana PMT-2001**
People living at sea level have around 5 million RBC per cubic millimeter of their blood whereas those living at an altitude of 5400 metres have around 8 million. This is because at high altitude–	**Atmospheric O_2 level is less and hence more RBCs are needed to absorb the required amount of O_2 to survive.**	**AIPMT-2006 / BHU PMT-2010 / JCECE-2013**
Under normal conditions the wall of RBC acts as permeable membrane to ..... ions–	**Cl^-, HCO_3^-**	**GUJCET-2018**
CO_2, pH and O_2 levels in the blood is detected by	**Chemoreceptors**	**GUJCET-2017**
The haemoglobin of a human foetus–	**has a higher affinity for oxygen than that of an adult**	**AIPMT-2008**
The most active phagocytic white blood cells are–	**Neutrophils and monocytes**	**JIPMER-2012 / GUCET-2011 / AIPMT-2008**
The mammalian cells is not capable of metabolizing glucose to carbondioxide aerobically–	**Red blood cells**	**AIPMT-2007**
An oxygen carrier in human blood is-	**Haemoglobin**	**UPCPMT-2013 / JIPMER-2014 / DUMET-2011**
In a healthy adult man, the smallest type of leucocytes are–	**Lymphocytes**	**AP EAMCET-03.09.2021 Shift-I**
Reduction in pH of blood will–	**decrease the affinity of hemoglobin with oxygen**	**NEET-2016 Phase-I**
About RBCs in Humans is true–	**They carry about 20-25 percent of CO_2**	**AIPMT (Screening)-2010**
The haemoglobin content per 100 ml of blood of a normal healthy adult is–	**12 - 16 g**	**AIPMT (Mains)-2010**
There is no DNA in –	**Mature RBCs**	**AIPMT-2009**
At high altitude, RBCs of human blood will–	**Increase in number**	**JIPMER-2004**
Haldane effect refers to–	**More acidity in the blood**	**JIPMER-2015**
People who have migrated from the planes to an area adjoining Rohtang pass about six months back–	**Have more RBCs and their haemoglobin has a lower binding affinity to O_2**	**BCECE-2015, AIPMT (Screening)-2012**
Number of oxygen molecules bound in saturated haemoglobin molecule–	**Four**	**AP EAMCET-2010**
Antigen -Anti body complexes are removed by–	**Eosinophils, Monocytes**	**AP EAMCET-12.07.2022 Shift-II**
Nutrient in the blood plasma is NOT a–	**Creatinine**	**MHT CET-08.10.2020 Shift-I**
The corpuscles which form maximum number in normal total blood count are–	**Erythrocytes**	**MHT CET-08.10.2020 Shift-I**
Antiserum contains–	**Antibodies**	**AIIMS-1997**
Total amount of oxygen is present in one gram of haemoglobin–	**1.34 ml**	**AIIMS-1997**
Plasma minus fibrinogen is–	**Serum**	**J&K CET-2002**
If RBCs are placed in distilled water, they will–	**Cell Burst**	**Assam CEE-2014**
Blood cells is involved in antibody production–	**B-lymphocyte**	**Assam CEE-2014**

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Examination of blood of a person suspected of having anaemia, shows large, immature, nucleated erythrocytes without haemoglobin. Supplementing his diet with which of the following, is likely to alleviate his symptoms– **Folic acid and cobalamine**	**BHU PMT (Mains)-2010, CMC Ludhiana-2009 / AFMC-2008**
When a sea diver goes very deep he has to breathe on compressed air at high pressure. After sometimes he loses his strength to work and feel drowsy. This is because of– **More N_2 diffusing in blood and body fats**	**BVP-2003**
Hematology is the study of– **Blood**	**DUMET-2003 / BVP-2004**
An anticoagulant and checks blood coagulation in blood vessels is– **Heparin**	**Uttarakhand PMT-2006**
In normal healthy female, the number of RBC/mm^3 of blood is– **4.5-5.0 million**	**Uttarakhand PMT-2006**
The type of WBCs that are most abundant in blood of rabbit and other vertebrates– **Neutrophils**	**Uttarakhand PMT-2006**
Human cells lacks a nucleus– **Mature erythrocyte**	**KVPY (SA)-2018**
Name the blood cells, whose reduction in number can cause clotting disorder, leading to excessive loss of blood from the body– **Thrombocytes**	**NEET-2016 Phase-II**
Erythropoiesis starts in– **Red bone marrow**	**AIPMT-2015**
The enzyme present in RBC– **Carbonic anhydrase**	**AP EAPCET-11.07.2022 Shift-I / AIPMT-1991**
Haemoglobin in man is made up of– **4 Polypeptide chains and 4 heme molecules**	**AP EAPCET-11.07.2022 Shift-I**
Rouleaux formation is related to which of the cell/tissue– **RBCs**	**JIPMER-2018**
Band 3 protein in RBC has the function of– **It mediates the exchange of cellular HCO_3^- with Cl^- in plasma**	**JIPMER-2019**
Highest pH is– **Human blood**	**AIIMS-26.05.2018 Shift-I**
The engulfs pathogens rapidly is– **Neutrophils**	**AIPMT-1989**
Cells formed in bone marrow include– **RBCs and leucocytes**	**AIPMT-1992**
Component of blood responsible for producing antibodies is– **Lymphocytes**	**AIPMT-1992**
Agranulocyte is– **Lymphocyte**	**AIPMT-1997**
Decrease and increase in the number of RBCs is respectively termed as– **Erythrocytopenia and polycythemia**	**MHT CET-2019**
Scavengers are called– **Macrophages**	**MHT CET-2019**
The cells that is not a phagocytic cell– **Basophil**	**WB JEE-2011**
The organ that is considered as Graveyard of RBC where most of them are destroyed by macrophages– **Spleen**	**WB JEE-2007, Rajasthan PMT-2001**
Leucocytes (WBCs) are considered as true cells because– **They possess nucleus**	**WB JEE-2007**
It is transfer of ones own blood to increase the haemoglobin content to carry out more oxygen– **Blood doping is true**	**MGIMS Wardha-2015**
Blood cells involved in inflammatory reactions are- **Basophils**	**DUMET-2011**
The blood cells are not true– **Platelets**	**AP EAMCET-1998**
The enzyme carbonic anhydrase takes part in CO_2 transport is found in– **RBCs**	**UP CPMT-2012**
Blood is a kind of– **Fluid connective tissue**	**VMMC-2009**
Average life span of an erythrocyte is– **120 days**	**AFMC-2005 / CGPMT-2005 / DUMET-2005, UPCPMT-2003 / J&K CET-2001**
In sickle cell anaemia there is deformity of– **RBCs**	**J&K CET-2001**
There will be 6,000 to 10,000 white blood cells (WBC) per cubic millilitre of blood. A slight increase in WBC count is observed during infection. This phenomenon is known as– **Leucocytosis**	**TS EAMCET-12.05.2017**
Maximum quantity of iron present in– **Red blood cells**	**Rajasthan PMT-1995**
Haematocrit value gives– **Amount of RBC in blood**	**BCECE-2001**
Bone marrow is made up of– **Fatty tissue, areolar tissue and blood vessel**	**Rajasthan PMT-2009, Punjab MET-2009**
Leucocytes transforms into macrophages– **Monocyte**	**WB JEE-2009**

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The average diameter of red blood corpuscles of man is–	**7.2 µm**	**WB JEE-2009**
Red cell count is carried out by–	**Haemocytometer**	**WB JEE-2010**
The process of formation of blood corpuscles is called–	**Haemopoiesis**	**AFMC-2005, 2001**
Iron free compound of haemoglobin is–	**Globin**	**BVP-2010**
WBC accumulate at site of wound by –	**Diapedesis**	**AMU-2011 / Punjab MET-2003 / AIIMS-1995**
Haemoglobin contains–	**Fe^{2+}**	**UP CPMT-2003 / Rajasthan PMT-1998, BVP-2000 / AIIMS-2013 / DUMET-2005**
The pH of blood is–	**Between 7.35 -7.45**	**UP CPMT-2003 / TS EAMCET-03.05.2018 Shift-I, CG PMT-2005 / DUMET-2005**
Mature erythrocytes cannot utilize glucose because they lack–	**Mitochondria**	**DUMET-2010**
Blood platelets are found only in the blood of–	**Mammals**	**Uttarakhand PMT-2004**
The haemoglobin of a human foetus–	**Has a higher affinity for oxygen than that of an adult**	**BHU PMT (Screening)-2010**
The life span of human WBC is approximately–	**Less than 10 days**	**Haryana PMT - 2000 / VMMC-2002 / AIPMT-1997**
A smear of blood from a healthy individual is stained with a nuclear stain called hematoxylin and then observed under a light microscope. Which of the following cell type would be highest in number–	**Neutrophils**	**KVPY SA-2012**
If you suspect major deficiency of antibodies in a person, to which of the following would you look for confirmatory evidence–	**Serum globulins**	**Rajasthan PMT-2010**
Serum differs from plasma in the absence of –	**Fibrinogen**	**Rajasthan PMT-2001, AMU-1998**
Human blood maintains homeostasis in the internal environment of the body by–	**Replenishment of nutrients and oxygen and elimination of metabolic wastes from the extracellular fluid**	**Karnataka CET-2003**
Carries gases as well as unused products in the human body–	**Blood and lymph**	**Manipal-2013**
In blood, carboxyhaemoglobin is formed by–	**Inhalation of CO**	**Manipal-2013**
The difference between blood and lymph is-	**Blood has RBCs and WBCs while lymph has lymphocytes**	**J&K CET-2006**
The largest corpuscles in mammalian blood are–	**Monocytes**	**VMMC-2005 / AMU-2004, BVP-2003 / Manipal-2002**
These blood corpuscles are also called polymorphs–	**Neutrophils**	**MHT CET-07.10.2020 Shift-I**
The substance that is in higher concentration in blood than in glomerular filtrate–	**Plasma proteins**	**Manipal-2009**
If one litre of water is introduced in human blood, then–	**RBC collapses and urine production increases**	**DUMET-2009**
Besides RBCs, blood plasma also carries oxygen in solution. The percentage is–	**2 to 3%**	**VMMC-2010**
In the animal body blood bank is–	**Spleen**	**Haryana PMT-2003**
Abnormal rise in white blood is–	**Leukocytosis**	**CMC Vellore-2007**
The ratio of RBCs to WBCs in human is–	**1:600**	**VMMC-2015**
Leukopenia is the condition in which–	**The total number of leucocytes decreases below 4500/cu mm**	**VMMC-2015**
In man erythrocytes are found in–	**5.0 million per microliter**	**Rajasthan PMT-2000**
Megakaryocytes give rise to–	**Platelets/Thrombocytes**	**AMU-1996**
The principle cation in human blood is–	**Sodium**	**CMC Ludhiana-2012**
The movement of neutrophils to site of inflammation is due to–	**Chemotaxis**	**Haryana PMT-2011**

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Types of blood group	
A man with blood group A marries a woman having blood group B. The maximum possible blood groups among their progenies are– **A, B, AB,O**	**Karnataka CET-2020 / AIIMS-2019 / BCECE-2008, JIPMER-2006 / MGIMS Wardha-2005**
If the blood group of father is A (homozygous) and that of mother is AB, these blood groups are not expected in their children– **B, O**	**TS EAMCET-11.05.2023, Shift-II**
When red blood corpuscles containing both A and B antigens are mixed with your blood serum, they agglutinate. Hence your blood group is ---------- type– **O**	**TS EAMCET-30.07.2022 Shift-II, Karnataka CET-2010**
A certain road accident patient with unknown blood group needs immediate blood transfusion. His own doctor friend at once offers his blood. What was the blood groups of the donor– **Blood group O**	**AIPMT (Screening)-2012, AP EAMCET-06.09.2021 Shift-I**
The most popularly known blood grouping is the ABO grouping. It is named ABO and not ABC, because "O" in it refers to having– **No antigens A and B on RBCs**	**AIPMT-2009**
ABO blood group system was proposed by– **Karl Landsteiner**	**AP EAMCET-11.07.2022 Shift-II**
The correct genotype of blood group A is– **I^AI^A/ $I^A I^O$**	**AP EAMCET-11.07.2022 Shift-II**
A man of blood group 'A', marries a woman of blood group 'B', both of them are heterozygous for blood group, chances of their first child having blood group AB will be– **25%**	**JIPMER-2004, PUNJAB MET-2003**
In man, four phenotypes of blood groups are due to the presence of antigen 'A' and antigen 'B' on the RBC. The chromosome that has the gene to control these antigens is– **9th chromosome**	**AP EAMCET-2007**
If the blood group of a child is 'A' and that its mother's is 'B' then the genotype of mother and father may be– **BO × AO**	**AP EAMCET-2006**
Blood group 'O' – **No antigens**	**CGPMT-2006 / JIPMER-2004, Punjab MET-2004, 2003 / AIPMT-2001 / Manipal-2000**
A mother with blood group B type has a child with blood group type O. What is the possibility of the genotypes of that mother and father– **I^OI^O, I^AI^O (father) and I^BI^O (mother)**	**AP EAMCET-2010**
A woman with blood group 'O' has a child with blood group 'O'. She claims that a man with blood group 'A' as the father of her child. What would be the genotype of the father, if her claim is right– **I^AI^O**	**AP EAMCET-2009**
Person with blood group AB is considered as universal recipient because he has– **both A and B antigens of RBC but no antibodies in the plasma**	**NEET-2021 / AIPMT-2014, 1991, Rajasthan PMT-2001 / DUMET-2005, AMU-2006, 2001 / MGIMS Wardha-2003, UPCPMT-2003**
A donor having blood group AB can safely donate red blood cells to recipients having blood group type– **Only AB**	**AMU-2015**
If a child is of O blood group and his father is of B blood group, the genotype of father is– **I^oI^B**	**UP CPMT-2010 / JIPMER - 2012 / JCECE-2015, Uttarakhand PMT-2009 / BVP-2009**
Inheritance of ABO blood group illustrates– **Multiple allelism**	**MGIMS Wardha-2007**
A normal woman whose father was a colour blind person is married to a normal man. Her sons would likely to be– **50% colourblind**	**DUMET-2008**
First husband of Asha had ABO blood type A and their child had type O. She remarried and her second husband has ABO blood type B and their child had type AB. What is the ABO genotype of Asha and also name her blood type– **I^Ai, blood type A**	**J&K CET-2014**

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Three alleles namely I^A, I^B and i control the blood grouping in human beings. How many different genotypes are likely to be present in the human population– **6**	**Kerala PMT-2015**
Parents of blood group O will have offsprings of– **O only**	**VMMC-2002**
A hormone molecule binds to a specific protein on the plasma membrane inducing a signal. The protein it binds to is called– **Receptor**	**KVPY SB & SX-2012**
Universal donor is– **O Rh^-**	**Uttarakhand PMT-2009 / VMMC-2009, BVP-2009 / AMU-2002 / Haryana PMT-1999**
Three children in a family have blood types O, AB and B respectively. What are the genotypes of their parents– **I^A i and I^B i**	**Karnataka CET-2003**
Blood groups are named on the basis of the agglutinogens A and B present in the – **RBC**	**JIPMER-1995**
The clumping of red cells because of wrong transfusion be– **Agglutination**	**Haryana PMT-1999**
The Blood group person that cannot donate blood to others– **AB blood group**	**J&K CET-2007**
The genotypic expression seen in a person of blood group AB is called– **Co-dominance**	**CG PMT-2010 / KVPY SA-2019**
In the ABO system of blood groups, if both antigens are present but no antibody, the blood group of the individual would be– **AB**	**AIPMT-2004 / Manipal-2007 / CG PMT-2006**
RH-Grouping and Blood Coagulation	
If the blood group of parents are O and AB, these blood groups are not expected in their children– **O, AB**	**TS EAMCET-10.05.2023, Shift-II**
The formation of intrisinic factor -x activator complex for blood coagulation – **Activated christmas factor + AHG + Phospholipid + Ca^{2+}**	**GUJCET-2017**
With regard to the ABO blood typing system, if a man who has type B blood and a woman who has type O blood were to have children, what blood types could the children have– **B or O**	**Karnataka CET-2012**
The condition of erythroblastosis foetalis occurs only when– **The mother is Rh^- and the foetus is Rh^+**	**NEET -2020 / Karnataka CET- 2018, 2012, 2010, AIPMT -2000, 1998 / Rajasthan PMT-2005**
Rh factor is present in– **Man and Rhesus monkey only**	**JIPMER-2009 / VMMC-2006 / Haryana PMT-2002**
Rh-factor can produce disease– **Erythroblastosis foetalis**	**JIPMER-2014 WBJEE - 2014**
Rh –ve person donated blood to Rh + ve person for the second time. Then– **Nothing happens to Rh +ve person**	**Karnataka CET-2007**
The plasma proteins that is involved in the coagulation of blood– **Fibrinogen**	**AIPMT (Screening)-2011**
Serum differs from blood in– **Lacking clotting factors**	**NEET-2016 Phase-II**
The enzyme that is responsible for the conversion of inactive fibrinogens to fibrins– **Thrombin**	**NEET-2021, AIIMS-27.05.2018 Shift-I**
Heparin is secreted by– **Mast cell**	**MHT CET-01.10.2020 Shift-I, JIPMER-2005**
The fat soluble vitamin that helps in synthesis of prothrombin is– **Vit K**	**AIIMS-26.05.2018 Shift-I / HPCET-2012, VMMC-2004 Haryana PMT-2003, Punjab MET-2003 AIPMT-1993**
The blood does not clot inside the body because– **Heparin in blood**	**Tripura JEE-2019, 2021 / TS EAMCET- 12.05.2017, CMC Vellore-2014 / JCECE-2012, WB JEE-2010 / AIIMS-2007, BCECE-2004 / J&K CET-2004, AFMC-2003 / Rajasthan PMT-2001, 2003, JIPMER-1998, 1995**

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Calcium level in the blood is controlled by the– **Parathormone**	**JIPMER-1999**
The rejection of organ transplanting in humans is prevented by using– **Cyclosporin**	**AMU-2011**
In the clotting mechanism pathway, thrombin activates factors- **XI, VIII, V**	**AMU-2010**
A person may die after getting a bee sting in his body due to– **Anaphylactic shock**	**AMU -2000**
Protein C, which inactivates factor VIII and thereby partly inhibits the clotting mechanism is activated by– **Thrombin**	**AMU -2000**
The class of immunoglobulins that can trigger the complement cascade– **IgM**	**KVPY SB & SX-2012**
An Rh^- individual receives Rh^+ blood. The recipient becomes– **iso - immunised**	**VMMC-2006, Haryana PMT-2002**
Required for blood clotting– **Ca^{2+}, thromboplastin**	**MHTCET-2020 / Manipal-2015, Assam CEE-2014 / BHU PMT (Screening)- 2011, DUMET-2005 /UP CPMT-2003, Rajasthan PMT-1995, 2003 / Haryana PMT-2000**
Bacteria cannot survive in a highly salted pickle because– **They become plasmolysed and death occurs**	**J&K CET-2015**
Formation of prothrombinase is initiated by– **Thromboplastin**	**MHT CET-06.10.2020 Shift-I, Karnataka CET-2008, JIPMER-2007**
A person meet with a severe road accident and immediately is in need of blood transfusion. But there is no time to analyses the blood group of victim, the safe transfer blood of group is– **O,Rh^-**	**BVP-2013**
The genotype of Rh^+ person could be– **RR, Rr**	**AMU-1996**
Blood clotting corpuscle is– **Thrombocyte**	**AFMC-2010**
Tissue fluid (lymph)	
The set of secondary lymphoid organs from the– **Spleen and lymph nodes**	**TS EAMCET-2015**
MALT constitutes about _____ percent of the lymphoid tissue in human body– **50%**	**NEET-2017**
Peyers patches are – **Group of lymph nodules**	**Haryana PMT-2001**
The second pair of lymph hearts pump lymph into– **Femoral vein**	**JIPMER-1998**
The lymph serves to– **Return the interstitial fluid to the blood**	**BVP-2012 / Uttarakhand PMT-2008, Manipal-2008 / BVP-2007, MGIMS Wardha-2006 / VMMC-2002, Haryana PMT-2000 / AIPMT-1995**
Lymph (nodes) glands form- **Antibodies**	**Manipal-2013 / CG PMT-2005**
Circulatory pathway	
Sino–Atrial Node (SAN) is situated in– **The right atrium**	**AP EAPCET-22.05.2023, Shift-II**
Closed type of circulatory system is found in the members of– **Annelida, Cephalopoda, cephalochordata and Vertebrata**	**AP EAMCET-11.07.2022 Shift-II**
Ventricular contraction in command of– **S.A. Node**	**AIPMT-1999**
Arteries are best defined as the vessel which– **Carry blood away from the heart to different organs**	**AIPMT (Screening)-2011**
Open circulatory system is present in– **Arthropods**	**Kerala PMT-2008**
The terminal electron acceptor is– **Molecular O_2**	**Punjab MET-2009**
Thick walled in which blood flow at high pressure is– **Artery**	**JCECE-2008**

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Valves are present in– **Veins**	**JIPMER-1999**
William Harvey explained many aspects of human physiology was– **Circulation of blood**	**AMU -2000**
Single circuit circulatory system is characteristic of – **Fishes**	**CG PMT-2007**
In the heart of rabbit, the mitral valve is attached to the papillary muscles by– **Chordae tendinae**	**AP EAMCET-2003**
Artery supplying blood to diaphragm is known as – **Phrenic artery**	**Haryana PMT-1999 Rajasthan PMT-1995**
The pulmonary artery carries– **Deoxygenated blood to the lungs**	**KVPY SA-2014**
The organ which gets only oxygenated blood is– **Spleen**	**AFMC-2001**
Purkinje fibres are present in– **Heart**	**BCECE-2007, Rajasthan PMT-1998**

Human Circulatory System

The type of EEG waves recorded in persons who are mentally very active and tense are– **Beta waves**	**TS EAMCET 10.05.2023 Shift-I**
The small blood vessels present in the walls of large blood vessels like aortic arches are called– **Vasa vasorum**	**TS EAMCET-11.05.2023, Shift-II**
Bundle of His is a network of– **Muscle fibres found only in the ventricle wall**	**AIPMT-2003, AP EAMCET-2006**
The time for P wave in ECG is– **0.12 sec**	**GUJCET-2018**
The frequency of heart beat in our body is maintained by– **SA Node**	**Karnataka CET-2012**
In myogenic heart, present in molluscus and vertebrates, action potential is generated from– **A patch of modified heart muscle and SA node**	**UP CPMT-2014**
Left Atrio - ventricular valve is– **Mitral valve**	**AP EAMCET-2010**
Right atrium: coronary sinus :: left atrium– **pulmonary vein**	**MHT CET-01.10.2020 Shift-I**
The transverse groove that separates the atria and ventricles is– **Coronary Sulcus**	**AP EAPCET-11.07.2022 Shift-I**
Chordae tendinae are found in– **Ventricles of heart**	**MP PMT-2013, AIIMS-1996**
The reason that for fast conduction of impulse in heart muscles is– **Presence of intercalated discs**	**AIIMS-27.05.2018 Shift-I**
The heart sound 'dub' is produced when– **Semi-lunar valves at the base of aorta get closed**	**HP CET-2018 / AIPMT-1994**
Continued consumption of diet rich in butter, red meat and eggs for a long period may lead to– **Hypercholesterolemia**	**Punjab MET-2006**
Dilation of the blood vessels is caused by– **Adrenaline**	**MHT CET-2019**
Mitral valve and tricuspid valve are attached to the papillary muscles by– **Chordae tendineae**	**MHT CET-2017**
The study of blood vessels is termed as– **Angiology**	**MHT CET-2015**
The nodal tissue located in the lower left corner of the right atrium is– **AV node**	**MHT CET-2014**
Purkinje fibres are– **Nerve fibres**	**JIPMER-1996**
Foramen ovale is– **Connects the two atria in the foetal heart**	**DUMET-2011**
The instrument by which B.P. of man is determined– **Sphygmomanometer**	**DUMET-2003**
The innervation of heart is primarily meant for– **Regulation of heart beat**	**MP PMT-2013**
The valve is present at the opening of coronary sinus– **Thebesian valve**	**WB JEE-2014**
The heart muscles are– **Striated and involuntary**	**VMMC-2004**
The heart is covered by a membrane called– **Pericardium**	**WB JEE-2015**
The layer of heart wall consists of cardiac muscles– **Myocardium**	**WB JEE-2006**
The blood vessel which supply oxygenated blood to cardiac tissue is– **Coronary artery**	**WB JEE-2012**

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The 'pacemaker' of heart is– **SA node**	**Tripura JEE-2018/ WB JEE-2011/ AMU-2008, VMMC-2008 / MGIMS Wardha-2008, Punjab MET - 2004 / Karnataka CET-2002, BVP-2004 2002, 2000 / Manipal-2000**
Eustachian valve guards the opening of– **Inferior venacava**	**MHT CET 5.10.2020 Shift-I**
Endothelium of blood vessels is made up of– **Simple squamous epithelium**	**J&K CET-2008**
The opening of auricles and ventricle on the right side is guarded by– **Tricuspid valve**	**DUMET-2008**
The chamber of heart has the thickest muscular wall is– **Left ventricle**	**BHU PMT (Screening)-2010, Karnataka CET-2005, AIIMS-1999**
In higher vertebrates, SA nodes helps in– **Initiation of heart beat**	**J&K CET-2001,2003, 2013 / JIPMER - 2011, JCECE-2010 / AMU-2009, Punjab MET -2008, 2010 / AIPMT-2002, Rajasthan PMT -2001, 2007 / Haryana PMT – 2000**
"Lub" sound produced during heart beat is caused by– **Ventricular systole**	**AMU-2012**
The cardiac pace-maker in a patient fails to function normally. The doctors find that an artificial pace-maker is to be grafted in him. It is likely that it will be grafted at the site of- **Sinoatrial node**	**Manipal-2015 / CMC Ludhiana-2009, AFMC-2008 / JCECE-2009, CG PMT-2006 / AIPMT -2004**
Pace-maker of the heart is situated– **In wall of right atrium**	**CG PMT-2006 / JCECE-2004 / Haryana PMT-2003**
Inner lining of blood vessels is formed by- **Squamous epithelium**	**VMMC-2010**
Muscle fibres found only in the ventricle wall is a network of– **Bundle of His**	**BCECE-2015, Manipal-2010, MGIMS Wardha-2010, JIPMER-2008**
Cardic Cycle and ECG	
In cardiac cycle maximum time is taken by– **Atria diastole**	**JIPMER-2016**
Electrocardiograph was developed by– **Willen Einthoven**	**AMU-2005 / BVP-2005, Haryana PMT-2004 / Manipal-2003**
The factors that decreases the heart rate and cardiac output – **Signals from parasympathetic nerves**	**TS EAMCET-30.07.2022 Shift-II**
The QRS complex in a standard ECG represents– **Depolarisation of ventricles**	**NEET-2020 Phase-I**
Associated with decrease in cardiac output – **Parasympathetic neural signals**	**NEET-2020 Phase-II**
Doctors use stethoscope to hear the sounds produced during each cardiac cycle. The second sound is heard when– **The tricuspid and bicuspid valves are closed**	**AIPMT (Re-Exam)-2015**
75 to 90 mm Hg of mercury is an adult's normal– **Diastolic pressure**	**SRM JEEE -2017**
During ventricular systole in a mammalian heart the– **Aortic pressure increases**	**AP EAMCET-25.09.2020 Shift-I**
Pulse can be detected on a superficial artery like that of– **Wrist**	**JIPMER-2002**
ECG is least effective in detecting abnormalities in– **Cardiac contractility**	**BVP-2011**
The stroke volume of an adult human heart is– **70 mL**	**WB JEE-2015, 2012**

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If heart beats 75 beats/min, then the time for cardiac cycle is– **0.8 sec**	**WB JEE-2006, WB JEE-2010, 2009, J&K CET-2008**
The value of that systolic and diastolic pressure in human– **120/80**	**UP CPMT-2012, Rajasthan PMT-2011, MHT CET – 2004,2007, Haryana PMT-2003, Karnataka CET - 2001**
The chemical that is released by vagus nerve to slow down the heart beat– **Acetylcholine**	**Rajasthan PMT-1998**
ECG is a measure of– **Difference in electric potential**	**HP CET-2011 / BCECE-2006, VMMC-2005 / AMU-2004/ BVP- 2003**
In ECG, P-R interval corresponds to– **Time delay in AV node**	**CMC Vellore-2014, AMU-1999**
Hamburger shift is called– **Chloride shift**	**Uttarakhand PMT-2009, J & K CET-2007**
During what Oxygenated blood is pumped into the aorta and deoxygenated blood pumped into the pulmonary artery– **Ventricular systole**	**Karnataka CET-2003**
First heart sound is– **Lubb sound at beginning of ventricular systole**	**Haryana PMT-1999**
Fast heart rate is– **Tachycardia**	**AMU-2005 / Uttarakhand PMT-2004, Manipal-2004**
Pulse beat is measured from– **Arteries**	**Haryana PMT-2004, Manipal-2003**
Auricular systole-ventricular systole - complete cardiac diastole includes – **A cardiac cycle**	**BVP-2015**
The term "Gristle" is also used for– **Cartilage**	**AP EAMCET-2000**
72 beat per minute heart beat rate of man is controlled by– **SA-node**	**BCECE-2004**
Double circulation	
The volume of blood that enters into the aorta with each ventricular systole is called– **Stroke volume**	**Karnataka CET-2012**
In humans, blood passes from the post caval to the diastolic right atrium of heart due to– **Pressure difference between the post caval and atrium and suction pull**	**AIPMT-2008**
..... double circulations are normally completed by the human heart, in one minute– **Seventy two**	**Karnataka CET-2006**
Blood pressure in the pulmonary artery is– **More than that in the pulmonary vein**	**NEET-2016 Phase-I**
The blood circulation that starts and ends in capillaries– **Portal system**	**AP EAMCET-2011**
The carries that blood rich in food materials, such as glucose and amino acid, from intestine to liver– **Hepatic portal vein**	**AIIMS-1994**
The animals that has two separate circulatory pathways– **Whale**	**AIPMT (Re-Exam)-2015**
Blood leaving liver and going towards heart is rich in– **Urea**	**JIPMER-2006**
All veins carries deoxygenated blood except– **Pulmonary veins**	**BVP-2011 / AIIMS-2001, Rajasthan PMT-2001 / AIPMT-1989**
Wall of blood capillary is formed of– **Endothelial cells**	**AIPMT-1991**
Blood capillaries are made up of– **Only Endothelium**	**AIPMT-1993**
Pulmonary vein has the characteristic that it carry blood from– **Lung to heart**	**UP CPMT-2012**
Total times of a red blood corpuscle will have to pass through the heart in its journey from hepatic artery to the aorta– **Two times**	**Karnataka CET-2005**

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The system in that the veins begin as capillaries in one organ and breaks up into capillaries in different organ is called– **Portal vein**	**J&K CET-2010**
The first heart sound is produced when– **Bicuspid and tricuspid valve close quickly**	**WB JEE-2006**
Second heart sound is– **Dub during closure of semilunar valves**	**VMMC-2011 / WB JEE-2012**
Arteries that carry deoxygenated blood are– **Pulmonary arteries**	**UP CPMT-2010**
Blood circulation in humans is– **Closed**	**Haryana PMT-2002**
Carotid artery supplies– **Oxygenated blood to brain**	**Haryana PMT-2003**
Regulation of cardiac activity	
The set of compounds that constitutes vasodilators– **Histamine and bradykinin**	**AP EAMCET-12.07.2022 Shift-II**
A specialised nodal tissue embedded in the lower corner of the right atrium, close to Atrio-ventricular septum, delays the spreading of impulses to heart apex for about 0.1 sec. This delay allows– **The atria to empty completely**	**NEET (Odisha)-2019**
Blood-cholesterol has been commercialised as a lowering agent– **Statins**	**Karnataka CET-2017**
Blood pressure increases and heart rate decreases in response to– **Increased intracranial pressure**	**WB JEE-2006**
The difference between systolic and diastolic pressure in human is– **40 mm Hg**	**WB JEE-2010, MHT CET - 2006, Haryana PMT-1999**
When muscles contract they have squeezing effect on veins running through them, this is called– **Muscle pump**	**HP CET-2011**
Disorders of circulatory system	
The disorder that change of single base pair in the gene for beta globin chain results in change of glutamic acid to valine– **Sickle cell anaemia**	**RE-NEET (UG)-06.06.2023 (Manipur)**
A person admitted to hospital as he had myocardial infarction. A cardiologist injecting him 'streptokinase'. Why– **It acts as clot buster**	**Karnataka CET-2016**
Coronary heart disease is due to– **Insufficient blood supply to the heart muscles**	**Karnataka CET-2007**
G-6-P dehydrogenase deficiency is associated with haemolysis of – **RBCs**	**JIPMER-2007 Manipal-2015**
Hypochromic microcytic anaemia and leucopenia are caused by the deficiency of ---------- respectively. **Pyridoxine and folacin**	**AP EAMCET-2009**
Tachycardia means fast heart rate with beats over ____ per minute– **100**	**MHT CET-08.10.2020 Shift-I**
During fatigue– **Muscles fails to be stimulated**	**Uttarakhand PMT-2006**
The deposition of lipids on the wall lining the lumen of large and medium sized arteries is referred to as– **Atherosclerosis**	**Kerala PMT-2009**
An oval depression called fossa ovalis is seen on– **Inter atrial septum**	**Kerala PMT-2009**
Heart attack is also called– **Myocardial infarction**	**MHT CET-2018**
The disease that occurs when the hemoglobin content of the blood goes down is– **Anaemia**	**Rajasthan PMT-2001**
The blood cancer is known as– **Leukemia**	**J&K CET-2010, Haryana PMT-2000**
A patient brought to a hospital with myocardial infarction is normally immediately given– **Streptokinase**	**JCECE-2018**
Vascular grafts are made up of – **Dacron or Teflon**	**BHU PMT (Screening)-2011**
Atherosclerosis is caused by the increase of ___ in the blood– **Cholesterol**	**Tripura JEE-2019, AIIMS -2007**
The presence of RBCs in urine is known as– **Haematuria**	**CG PMT-2011**

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16.

EXCRETORY PRODUCTS AND THEIR ELIMINATION

16.1 Excretory Products

- Osmoreceptors in the body are activated by– **Changes in blood volume, Changes in body fluid volume and Changes in ionic concentration**
- Group of animals are ammonotelic in nature– **Many bony fishes, aquatic amphibians, aquatic insects**
- Thin segment of ascending limb of loop of Henle is the lined by– **Squamous cells**
- Tissue is found in PCT and collecting duct– **Simple cuboidal brush border and simple cuboidal**
- A fresh water fish maintains osmoregulation by– **Eliminating excess of water and taking up salts from the environment**
- In crustaceans, the excretory functions are performed by– **Antennal glands and Green glands**
- Uricotelic mode of passing out nitrogenous wastes is found in– **Reptiles and birds**
- Bony fishes are– **Ammonotelic**
- Two examples in which the nitrogenous wastes are excreted from body in the form of uric acid are– **Birds and lizards**
- Excretory product of spider is– **Guanine**
- Green glands are excretory organs of– **Prawns**
- Ammonia is excretory material in– **Aquatic insects**
- On the basis of decreasing toxicity, which sequence of excretory waste is correct– **Ammonia > Urea > Uric acid > Amino acid**
- Nitrogenous wastes are excreted as urea in– **Mammals and marine fishes**
- In mammals, ammonia is converted into– **Urea**
- The structure helps in excretion and conservation of water in terrestrial arthropods– **Malpighian tubules**
- Excretory product of birds and reptiles is– **Uric acid**
- Excretion of the adaptation of water conservation is– **Uric acid**

16.2 Human Excretory System

- In humans the excretory system consists of– **One pair of kidneys, one pair of ureter, a urinary bladder and a urethra**
- Podocytes occur in– **Inner wall of Bowman's capsule**
- The projections of renal pelvis are called– **Calyces**
- Glomerulus and Bowman's capsule constitute– **Renal corpuscle**
- Columns of Bertini in the kidneys of mammals are formed as extensions of– **Cortex into medulla**
- Juxta-glomerular apparatus is formed by cellular modification in the– **Afferent arteriole and DCT**
- Adult human kidney measurements is– **Length 10-12 cm, Width 5-7 cm, Thickness 2-3 cm, Weight 120-170 g**
- Filtration slits are formed by– **Inner epithelium of Bowman's capsule**
- In human beings the capsular urine entering the Proximal Convoluted Tubule (PCT) is– **Isotonic to blood**
- The correct pathway for passage of urine in humans– **Collecting tubule → Ureter → Bladder → Urethra**
- Bowman's capsule and glomerulus together constitute the renal corpuscle– **True**
- The number of nephrons in a kidney is equal to– **The number of Bowman's capsules**
- The ascending limb of the Henle's loop extends as the DCT– **True**
- Collecting ducts converge and open into ..... through medullary pyramids in the calyces. **Renal pelvis**
- All Bowman's capsules of the kidney are found in– **Cortex**
- Vasa recta refers to– **A fine capillary which runs parallel to Henle's loop**
- In juxtamedullary nephrons, ... part of nephron runs deep into medulla. **Henle's loop**
- Glomeruli are confined to– **Cortex**

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- "Columns of Bertini" in the kidney of mammals are formed as the extension of– **Cortex into medulla**
- Funnel shaped space inner to the hilum is called– **Renal pelvis**
- Structural unit of kidneys are– **Nephrons**
- Notch on the inner concave surface of the kidney is called– **Hilus**
- Kidneys are reddish brown and– **Bean shaped structure**
- Kidneys situated– **Between the last thoracic and third lumbar vertebra**
- Each nephron has– **Two parts – Glomerulus and renal tubule**
- Shaped of Henle's loop and vasa recta is– **Hairpin shaped and 'U' shaped respectively**
- In mammals, the urinary bladder opens into– **Urethra**
- Nerves and blood vessels enter the kidneys through– **Hilum**
- Malpighian corpuscles are present in– **Cortex**
- The DCT's of many nephrons open into a straight tube called– **Collecting duct**
- Malpighian body is constituted by– **Glomerulus and Bowman's capsule**
- In majority of nephrons, the loop of Henle is too short and extends only very little into the-------- **Medulla**
- Kidneys are situated between the levels of last thoracic and ..... lumbar vertebrae. **3rd**
- Under normal condition _____ is completely reabsorbed in the renal tubule. **Glucose**

16.3 Urine Formation

- Vasa recta is– **U-shaped**
- Prevention of diuresis, would help by– **Reabsorption of Na^+ and water from renal tubules due to aldosterone**
- The pH of human urine is approximately– **6**
- The correct sequence of processes involved in urine formation is– **Filtration, Reabsorption, Secretion**
- Filtration pressure in glomerulus is caused due to– **Afferent arteriole is slightly wider than efferent arteriole**
- ..... is a special region formed by close placement and cellular modifications in afferent arteriole and distal convoluted tubule. **Juxtaglomerular apparatus**
- A large quantity of fluid is filtered everyday by nephrons in the kidneys but only about 1% of it is excreted as urine. The remaining 99% of the filtrate– **Is reabsorbed into the blood**
- ..... secreted by tubular cells during urine formation. **H^+, K^+, Ammonia**
- GFR of a healthy individual are– **125 ml/min, 180 L/day**
- The liquid which is collected in the cavity of Bowman's capsule is– **Blood plasma minus blood proteins**
- Reabsorption in the tubules of nephrons occurs by the process of– **Diffusion, Active transport**
- On their activation JG cells secrete– **Renin**
- Reabsorption of glucose from the glomerular filtrate in the kidney tubule is carried out by– **Active transport**
- Tubular secretion helps maintain a proper acid-base balance by removing ..... from blood. **H^+ ions and ammonia**
- On average, how much volume of blood is filtered by the kidneys per minute– **1100-1200 ml**
- First step in urine formation is– **Ultrafiltration**
- Full form of JGA– **Juxtaglomerular apparatus**
- Value of GFR is 125 ml/min. It mean– **125 ml is the amount of nephric filtrate formed per minute by both kidneys**
- Podocytes are the epithelial cells of– **Bowman's capsule**
- Main function of kidney is– **Ultrafilteration, Selective reabsorbtion**
- A membrane present between glomerular blood vessel and Bowman's capsule is– **Basement**
- Reabsorption of amino acids in the filtrate is facilitated by– **Active transport**
- A fall in glomerular filtration rate (GFR) activates– **Juxtaglomerular cells to release renin**
- In the kidney, the formation of urine involve the processes; arranged as– **Glomerular filtration, reabsorption and tubular secretion**

16.4 Functions of the Tubules

- Reflex phenomenon, voiding of urine and voluntarily controlled is known as– **Micturition**
- The maximum amount of electrolytes and water (70 - 80 percent) from the glomerular filtrate is reabsorbed in ..... part of the nephron– **Proximal convoluted tubule**
- Volume of urine is regulated by– **Aldosterone and ADH**

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- The part of nephron involved in active reabsorption of sodium is– **Proximal convoluted tubule**
- Human urine is usually acidic because– **Hydrogen ions are actively secreted into the filtrate**
- ..... is removed from the filtrate at loop of Henle. **Water material**
- ..... in regard to the excretion by the human kidneys. **Nearly 99 percent of the glomerular filtrate is reabsorbed by the renal tubules**
- Excretion of potassium is governed primarily by– **Potassium secretion in distal convoluted tubule**
- Long ducts of collecting tubules extend from– **Cortex to inner part of medulla**
- The part of nephron is impermeable to H_2O but allows transport of electrolytes actively or passively– **Ascending limb of Loop of Henle**
- Minimum reabsorption occurs in– **Henle's loop**
- Responsible for the production of concentrated urine– **Collecting duct**
- Ascending loop of Henle is permeable to– **Na^+, K^+, Cl^+**
- Reabsorption of useful substances from glomerular filtrate occurs in– **Proximal convoluted tubule**
- Glucose and amino acid are reabsorbed in– **Proximal tubule**
- Region of nephron found in renal medulla is– **Henle's loop**
- Proximal and distal convoluted tubules are parts of– **Nephron**
- Part of nephron impermeable to electrolytes is– **Descending limb of loop of Henle**
- About 70-80% of electrolytes and water are reabsorbed by– **PCT**
- Reabsorption of chloride ions from glomerular filtrate in kidney tubule occurs by– **Diffusion**
- If Henle's loop were absent from mammalian nephron, to be expected– **The urine will be more dilute**
- The part of nephron, absorption of filtrate is maximum– **Proximal convoluted tubule**

16.5 Mechanism of Concentration of the Filtrate

- Concentration of sodium and chloride ions is lowest– **Near the cortex**
- Total number of layers in filtration membrane are– **Three**
- Use of an artificial kidney during hemodialysis may result in– **Reduced RBC production, Reduced absorption of calcium ions from gastro-intestinal tract**
- The function of Bowman's capsule and Glomerulus– **Filtration of blood**
- The ability of producing concentrated (hypertonic) urine in vertebrates generally depends on– **Length of Henle's loop**
- Nephric filtrate moves in loop of Henle from apex of medullary pyramid to its base, osmolarity changes from– **300 to 1200 mOsmol/lit**
- Counter current mechanism observed in the renal medulla helps in the formation of– **Concentrated urine**
- Important role in the production of concentrated urine– **Vasa recta and Henle's loop**
- The osmolarity gradient in the cortex and medulla is formed by the action of– **NaCl and Urea**
- Human kidneys can produce urine nearly ..... times concentrated than the initial filtrate formed. **Four**
- The gradient helps in the easy passage of water from the collecting tubule is– **Interstilial gradient**
- We can produce a concentrated/dilute urine. This is facilitated by a special mechanism. Identify the mechanism– **Counter current mechanism in Henle's loop and vasa recta**

16.6 Regulation of Kidney Function

- The vasoconstrictor is– **Angiotensin-II**
- A decrease in blood pressure/volume will not cause the release of– **Atrial natriuretic factor**
- The juxtaglomerular apparatus is a special region formed by close placement and cellular modifications in– **Afferent arteriole and distal convoluted tubule**
- Nitrogenous waste is excreted in the form of pellet or paste by– **Pavo**
- Aldosterone - facilitates water reabsorption– **True**
- Diuresis is the condition in which– **The excretory volume of urine increases**
- Regarding regulation of kidney function, the correct sequences is– **An excess loss of fluid from body→Osmoreceptors→Hypothalamus →Neurohypophysis→ADH→Increases water permeability of DCT and CT→ prevention of diuresis**
- The function of renin is– **Conversion of angiotensinogen to angiotensin-I**

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- The reabsorption of the sodium from glomerular filtrate is regulated by the hormone– **Aldosterone**
- In urinary system, aldosterone takes part in retention (reabsorption) of– **Na^+, Water**
- ANF mechanism acts as a check on the– **Renin-angiotensin mechanism**
- Juxtaglomerular cells of kidney produce a peptide hormone– **Erythropoietin**
- These hormones converts angiotensinogen to angiotensin I– **Renin**
- ADH controls water permeability of– **Collecting duct**
- Osmoreceptors in our body are activated by changes in– **Blood volume, Body fluid volume, Ionic concentration**
- Mechanism involves lowering of BP, vasodilation and loss of Na– **ANF mechanism**
- Reabsorption of water in the kidney is controlled by– **Antidiuretic hormone (ADH)**

16.7 Micturition Role of Other Organs in Excretion

- _____ is metabolic waste of protein metabolism. **Urea, ammonia and creatinine**
- _____ is both osmoregulator as well as nitrogenous product. **Urea, ammonia and creatinine**
- Liver secretes bile containing substances like bilirubin, biliverdin, cholesterol, degraded steroid hormones, vitamins and drugs. Most of these substances ultimately pass out along with– **Digestive wastes**
- In micturition– **Urethra relaxes**
- Presence of glucose in urine is– **Glycosuria**
- Adult human excrete how many grams of urea per day– **25 - 30 gm**
- Sweat produced by the sweat glands contains– **NaCl, urea and lactic acid**
- A secretion that provides a protective oily covering for the skin is– **Sebum, Sterols, hydrocarbons and waxes**
- The voluntary response to the distension of urinary bladder is– **Micturition**

16.8 Disorders of Excretory System

- The presence of glucose and ketone bodies in urine are indicative of– **Diabetes mellitus**
- Renal calculi refers to the condition in which– **Stone is formed in kidney**
- Glomerulonephritis is– **Inflammation of glomeruli of kidney**
- The dialysis unit has a coiled cellophane tube is correct with reference to– **Haemodialysis**
- Accumulate in dangerous proportion in the blood of a person whose kidney is not working properly– **Urea**
- Haemodialysis is done in the condition when person is suffering from– **Uremia**
- Presence of substance in urine are indicative of diabetes mellitus– **Glucose and ketone bodies**
- Most of the renal calculi / stones are chemically– **Oxalates**
- Ultimate correction for acute renal failure is– **Kidney transplantation**
- Removal of urea in the blood by artificial means is known as- **Haemodialysis**
- Renal calculi are formed due to– **Calcium oxalate crystals accumulation**
- The condition of having having high levels of urea in the blood is– **Uremia**

16.9 Miscellaneous

- The primary function of sweat is– **To facilitate a cooling effect on the body surface**
- Sweat contains– **NaCl, Lactic acid and Small amount of urea**
- Glucose and amino acids in the filtrate are reabsorbed by tubular epithelial cells through– **Active transport**
- ..... the factors is responsible for the formation of concentrated urine– **Maintaining hyperosmolarity towards the medullary interstitium in the kidneys**
- If one kidney is removed from the body of a human being, will happen– **The person will survive**
- Substances are the excretory products in animals. Least toxic form among them– **Uric acid**
- Filtration of the blood takes place at– **Malpighian body**
- Lungs removed from our body– **CO_2 and H_2O**
- The pH of human urine is approximately– **6**
- Antidiuretic hormone is also known as– **Vasopressin**
- We can produce a concentrated/dilute urine. This is facilitated by a special mechanism. Identify the mechanism– **Counter current mechanism in Henle's loop/vasa recta**
- Dialysing unit (artificial kidney) contains a fluid which is almost same as plasma except that it has– **No urea**

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Excretory Substance and Their Process	
Function of contractile vacuole in Amoeba is– **Excretion and osmoregulation**	**Karnataka CET-20.05.2023**
The kinds of nephridia of earthworm that sent out the nitrogenous waste through anus are– **Pharyngeal and septal nephridia**	**TS EAMCET 10.05.2023 Shift-I**
The substances eliminated through sweat– **Urea, lactic acid in small amount and sodium choloride**	**AP EAPCET-23.05.2023, Shift-II**
A component of ornithine cycle (Urea cycle) is– **Ornithine, citrulline and fumaric acid**	**UP CPMT-2009, 2012/ HP CET-2012, JIPMER-2010 / JIPMER-2009, Punjab MET-2009 / CG PMT-2008, Rajasthan PMT-2008 / JIPMER-2004**
The conversion of a protein waste, the ammonia into urea occurs in– **Liver**	**CMC Ludhiana-2010**
Excretory product of spider is– **Guanine**	**Punjab MET-2009**
A man takes large amount of proteins. He is likely to excrete a greater amount of– **Urea**	**UP CPMT-2004**
The main nitrogenous waste of Hydra is– **Ammonia**	**UP CPMT-2004**
The most abundant, harmful and universal waste product of metabolism is– **CO_2**	**UP CPMT-2004**
Two examples in which the nitrogenous wastes are excreted from body in the form of uric acid are– **Birds and lizards**	**Punjab MET-1999 / AIPMT-1994**
Ornithine cycle removes two waste products from the blood in liver. These are– **Carbon dioxide and ammonia**	**JIPMER-2017 / Uttarakhand PMT-2010, JIPMER-2007 / CG PMT-2006, CG PMT-2006 / AIPMT-2005, AP EAMCET-2005 / JIPMER-2003, AFMC-2000 / AIPMT-1997,**
Synthesis of urea in liver takes place by– **Ornithine cycle**	**BCECE-2011**
The conversion of dangerous nitrogenous waste into less toxic excretory matter is carried out in man in the– **Liver**	**J & K CET-2009**
The end product of ornithine cycle is– **Urea**	**BHU PMT (Screening)-2010, AIIMS-1999 / HP CET-2018**
In living beings ammonia is converted into urea through– **Ornithine cycle**	**JIPMER-2003**
Blood leaving liver and going towards heart is rich in– **Urea**	**MGIMS Wardha-2005**
Some animals excrete uric acid in urine (uricotelic) as it requires very little water. This is an adaptation to conserve water loss these are most likely to be uricotelic– **Birds**	**KVPY SB & SX-2012**
In ureotelic animals urea is formed by– **Ornithine cycle**	**HP CET-2013 / Rajasthan PMT-2004, Haryana PMT-2001 / AIPMT-1997, JIPMER-1996**
Metabolic waste of protein metabolism is– **Urea, ammonia and creatinine**	**VMMC-2006, Haryana PMT-1999**
Excretion of nitrogenous waste products in semisolid form occurs in– **Uricotelic animals**	**CG PMT-2007**
The phenomenon, which represents terrestrial mode (dry habitat) of life, is– **Uricotelism**	**CG PMT-2007**
Aquatic reptiles are– **Ureotelic**	**CG PMT-2007**
Ammonia is the chief excretory substance in– **Fresh water fishes**	**CG PMT-2007**
The main excretory organ of prawn is– **Green gland**	**Haryana PMT-2005**

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Excretion means–	**Removal of useless substances and substances present in excess**	**AMU-2005 / Haryana PMT-2004, Manipal-2003 / BVP-2005**
Nitrogenous waste are –	**Uric acid, Guanine, Creatine**	**JIPMER-2001**
Ornithine cycle is related to–	**Excretion**	**AMU-2008**
Regulation of water in body is called–	**Osmoregulation**	**Haryana PMT-1999**
Excretory waste of birds and reptiles are–	**Uric acid**	**AFMC-2004**
Animal excreting urea produced during metabolism of amino acid is–	**Ureotelism**	**AFMC-2004**
The most toxic excretory product is–	**Ammonia**	**DUMET-2001**
The least poisonous nitrogenous waste is–	**Uric acid**	**CG PMT-2010**
Products of adenine and guanine metabolism are excreted by humans as–	**Uric acid**	**CG PMT-2010, AIIMS-1997**
The major nitrogenous waste of shark is–	**Urea**	**BCECE-2009**
Uric acid is the main excretory product in–	**Insects**	**BCECE-2002**
The urea enter in descending capillaries through–	**Diffusion**	**GUJCET-2018**
A person who is on a long hunger strike and is surviving only on water, will have–	**Less urea in his urine**	**AIPMT-2007**
Major nitrogenous waste product in ureotelic animals like rabbit and other mammals is–	**Urea**	**JIPMER-2006 / UP CPMT-2005**
Physiologically urea is produced by the action of an enzyme–	**Arginase**	**UP CPMT-2011 / UP CPMT-2004, MGIMS Wardha-2004**
In mammals, blood vessel that would normally carry largest amount of urea–	**Hepatic Vein**	**NEET-2016 Phase-I**
The principal nitrogenous excretory compound in humans is synthesised in –	**Liver, but eliminated mostly through kidneys**	**AIPMT (Screening)-2010**
A person is undergoing prolonged fasting. His urine will be found to contain abnormal quantities of–	**Ketones**	**JIPMER-2007**
Nitrogenous waste is excreted in the form of pellet or paste by–	**Pavo**	**NEET-2022**
Uric acid is formed in human from–	**Purines**	**J&K CET-2002**
Animal requiring minimum amount of water to produce urine are–	**Uricotelic**	**AMU-1995**
The organic molecule that protects body proteins from the damaging effect of urea is–	**Trimethylamine oxide**	**AP EAPCET-12.07.2022 Shift-I**
Uric acid forms in body by–	**DNA**	**AIIMS-26.05.2018 Shift-II**
Creatinine is formed by –	**Breakdown of creatine phosphate in muscle**	**AIIMS-27.05.2018 Shift-I**
The group of guanotelic animals are –	**Penguin, Spider, Scorpion**	**MHT CE-T2018**
The guano deposits are obtained from the excreta of–	**Marine birds**	**MHT CET-2016**
The nitrogenous excretory products are formed from the catabolism of amino acids by–	**Ornithine cycle**	**J&K CET-2010**
The elimination of urea is termed as –	**Ureotelism**	**Rajasthan PMT-2001**
Solenocytes are the main excretory structures in–	**Platyhelminthes**	**JIPMER-2011**
The excretory material of bony fish is–	**Ammonia**	**Manipal-2008**
Human excretory system and its structure		
Filtration of blood during urine formation takes place in–	**Glomerulus**	**Karnataka CET-2022**
The modified smooth muscles of the afferent arteries are–	**Juxtaglomerular cells**	**AP EAMCET-12.07.2022 Shift-II**
Podocytes are the cells, present in–	**Inner wall of Bowman's capsule in the nephrons of the kidney**	**TS EAMCET-31.07.2022 Shift-I, Tripura JEE-2019 / KVPY SA-2016, BCECE-2010 / AMU-1999**
Renal corpuscles of human kidney divided into–	**Bowman's capsule and glomerulus**	**VMMC-2011**

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Ducts of Bellini are present in– **The medulla of the mammalian kidney**	**WB JEE-2006 / DUMET-2002**
The cells of visceral layer of the Bowman's is known as– **Podocyte**	**Tripura JEE-2018**
Brush border is a characteristic of– **Proximal convoluted tubule**	**UP CPMT-2014 / Manipal-2011 / AIPMT-1990**
Which blood vessels in mammals carries least percentage of urea– **Renal vein**	**Manipal-2011 / CG PMT 2011**
The number of nephrons in a kidney is equal to– **The number of Bowmans capsules**	**Karnataka CET-2002**
Vasa recta refers to– **A fine capillary network which runs parallel to Henle's loop**	**Kerala PMT-2015**
Bowman's capsule is found in– **Malpighian capsule**	**BCECE-2008 / MGIMS Wardha-2005, UP CMPT –2005, 2010 / JIPMER-2001, 2006**
The basic functional unit of human kidney is– **Nephron**	**J&K CET-2015,2005 / VMMC-2007, Rajasthan PMT- 2005 / UPCPMT-2002, AFMC-2001 / AIPMT-1997**
Loop of Henle is associated with– **Excretory system**	**AMU - 2012, 2009 / Punjab MET-2008, Uttarakhand PMT-2004 / UP CPMT-2001**
Duct of Bellini opens on– **Renal papilla**	**HP CET-2011 / BCECE-2006, VMMC-2005 / AMU-2004 / BVP-2003**
Duct of Bellini is formed by joining _____ collecting ducts– **7**	**MHT CET-07.10.2020 Shift-I**
Proximal and distal convoluted tubules are parts of – **Nephron**	**MGIMS Wardha-2009 / AIPMT-1990**
The renal fluid isotonic to the cortical fluid and blood is found in– **The proximal convoluted tubule and distal convoluted tubule**	**AP EAMCET-2008**
The type of epithelium found in the inner lining of PCT is– **Cuboidal epithelium**	**Karnataka CET-2018**
Curved portion of the Henle's loop of the nephron are lined by– **Squamous epithelium**	**Karnataka CET-2008**
The part of nephron that is impermeable to water– **Ascending limb of loop of Henle**	**TS EAMCET-10.08.2021 Shift-I**
'Column of Bertini' in kidney of majority of the mammals are formed as the extension of– **Cortex in the medulla**	**UP CPMT-2014**
Facultative reabsorption of sodium ions and water takes place in– **Distal convoluted tubule**	**TS EAMCET-09.05.2019 Shift-I**
The Bowman's capsule, a part of the kidney is the site of– **Filtration of blood constituents**	**KVPY (SA)-2013**
Trigone in excretory system is– **A smooth connective tissue region in the urinary bladder**	**BCECE-2015**
A fall in the glomerular blood pressure stimulates the cells of____to secrete renin– **Juxta glomerular apparatus**	**MHT CET-2019**
____has maximum microvilli– **Proximal convoluted tubule (PCT)**	**MHT CET-2009**
The wall of urinary bladder in humans shows thick layer of smooth muscle called– **Detrusor**	**MHT CET-2014**
Bowman's capsule is part of– **Uriniferous tubule**	**CG PMT-2005**
The neural mechanism involved in passing out urine is called–**Micturition reflex**	**AP EAPCET-12.07.2022 Shift-I**
The common between kidney and skeleton in mammals is– **Pelvis**	**Jipmer-2012, BVP-2009**

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Formation of urine and Function of Tubules	
Average pH of human urine is– **6.0**	**AP EAPCET-22.05.2023, Shift-I WB JEE-2006**
Renal portal system is– **Absent in mammals**	**JCECE-2008**
Glucose is mainly absorbed in– **PCT**	**AFMC-2005**
Maintenance of body potassium levels is primarily by tubular– **Secretion in DCT and cortical collecting duct**	**AMU-2010**
Finally reabsorbed in distal convoluted tubule is– **Bicarbonate**	**VMMC-2006**
In presence of vasopressin, the greatest fraction of filtered water is absorbed in the– **Collecting duct**	**AMU-1997**
Loop of Henle is meant for absorption of– **Water**	**HP CET-2011 / BCECE-2007, VMMC-2005 / CG PMT-2005, AMU-2004 / BVP-2001, 2003 / Manipal- 2000**
A medicine that promotes the secretion of excess urine from body is– **Diuretics**	**BHU PMT (Screening)-2011**
The urine is– **Hypertonic to blood and isotonic to medullary fluid**	**Manipal-2009 / AP EAMCET-2009**
The yellow colour of urine is due to the presence of– **Pigment urochrome**	**Uttarakhand PMT-2008 / CMC Vellore-2011, Manipal-2008 / MGIMS Wardha-2006, BVP-2007 / BVP-2012 / DUMET-2008**
Hyperosmotic urine secretion depends upon the– **Length of loop of Henle**	**JCECE-2015**
Absorption of H_2O in DCT is controlled by– **ADH**	**DUMET-2008 / NMMC-2008, AMU-2008 / VMMC-2007, Rajasthan PMT-2005 / JIPMER-2004, Punjab MET-2003 / UP CPMT-2002**
Longest loop of Henle is found in– **Kangaroo rat**	**BCECE-2008**
Main function of glomerulus is– **Filtration of urine**	**BCECE-2004**
Human urine as compared to human blood is– **Hypertonic**	**BCECE-2004 / Haryana PMT-2001**
If Henles loop were absent from mammalian nephron the urine will be- **More dilute**	**Manipal-2015 / JCECE-2012, AP EAMCET-2011 / CMC Ludhiana-2008, AMU - 2007 / AIPMT-2003**
The proximal and distal convoluted tubules located within the human body– **Renal cortex**	**KVPY SA-2019**
In_____ the glomerular is isotonic to plasma– **Proximal convoluted tubule**	**GUJCET-2018**
The function is performed by collecting tubule of kidney– **In the maintenance of pH and ionic balance of blood by the secretion of H^+ and K^+ ions**	**GUJCET-2015**
Concentration of urine depends upon- **Length of Henle loop**	**AIPMT-2000**
The maximum amount of electrolytes and water (70-80 percent) from the glomerular filtrate is reabsorbed in the ..... part of the nephron. **Proximal convoluted tubule**	**AIPMT (Screening)-2012**
The function of a specific part of a human nephron is– **Podocytes :Create minute spaces (slit pores) for the filtration of blood into the Bowman's capsule**	**AIPMT (Screening)-2011**
In the "Cori cycle" (lactic acid cycle) is – **Glucose to lactate in muscle and Lactate to glucose in Liver**	**TS EAMCET-02.05.2018 Shift-II**
When 2 to 3 drops of Benedicts reagent are added to a urine sample and heated gently, it turns yellow. This colour change indicates that– **Urine contains 1% glucose**	**Karnataka CET-2011**

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The process of that urine formation takes place all along the renal tubule and collecting duct– **Tubular reabsorption and secretion**	**AIIMS-2017**
Under normal conditions ..... completely reabsorbed in the renal tubule– **Glucose**	**Uttarakhand PMT-2011 / AIPMT-1991**
The features best suits to a healthy/normal individuals urine– **Pale yellow colour; pH : 6.0; 96% H_2O, 2% urea, 2% other substances**	**TS EAMCET-08.05.2019 Shift-I**
Glucose and amino acids are reabsorbed in the– **Proximal tubule**	**WB JEE-2011**
The regions of a nephron does maximum reabsorption of useful substances, takes place– **Proximal convoluted tubule**	**VMMC-2011 / Karnataka CET-2005**
Proximal convoluted tubule of nephron is responsible for– **Selective reabsorption of glucose, amino acid NaCl and water**	**WB JEE-2014**
The ascending limb of loop of Henle is permeable– **Na^+**	**CG PMT-2004**
Process of Concentration of Filtrate	
The size of filtration slits of glomerulus– **25 nm**	**WB JEE-2009**
Glomerular filtrate is– **Blood minus blood corpuscles and plasma protein**	**MGIMS Wardha-2004 / UP CPMT-2004**
The part of nephron that reabsorption is minimum from filtrate– **Henle's loop**	**J&K CET-2008**
The glomerular filtrate consist of– **Water, urea, glucose and inorganic salts**	**JIPMER-1997**
Capillaries of glomeruli are– **Entirely arterial**	**Haryana PMT-1999**
The facultative absorption of water in the DCT and collecting duct takes place due to the secretion of– **ADH**	**MHT CET-06.10.2020 Shift-I**
A large quantity of fluid is filtered every day by the nephrons in the kidneys. Only about 1% of it is excreted as urine. The remaining 99% of the filtrate– **is reabsorbed into the blood**	**Karnataka CET-2009**
Vasopressin released from the neurohypophysis is mainly responsible for– **Facultative reabsorption of water through DCT**	**Karnataka CET-2008**
The hormones that regulate solute reabsorption during urine formation in rabbit– **Angiotensin II and aldosterone**	**AP EAMCET-2013**
In prevention of diuresis would help– **Reabsorption of Na^+ and water from renal tubules due to aldosterone**	**NEET-2020 Phase-I**
The factors that is responsible for the formation of concentrated urine– **Maintaining hyperosmolarity towards inner medullary interstitium in the kidneys**	**NEET-2019**
Human urine is usually acidic because– **Hydrogen ions are actively secreted into the filtrate**	**AIPMT (Re-Exam)-2015**
Effective filtration pressure in glomerulus is caused due to– **Afferent arteriole is slightly larger than efferent arteriole**	**Karnataka CET-2011**
90% absorbed in the nephron– **Glucose and amino acids – Active process**	**AIIMS-27.05.2018 Shift-II**
There is increase in blood urea when there is insufficient filtration in– **Bowman's capsule**	**AIIMS-2014**
In human, in that part of the uriniferous tubule reabsorption of glucose occurs– **Proximal convoluted tubule**	**AIIMS-2017**
If excess water passes out from the tissue without being restored by the kidneys, the cells would– **Shrivel and die**	**AIPMT-1994**
Reabsorption of useful substances from glomerular filtrate occurs in– **Proximal convoluted tubule**	**AIPMT-1989**
Glucose is taken back from glomerular filtrate through– **Active transport**	**AIPMT-1993**
The reason that the liquid part of blood to filter out from glomerulus into the renal tubule– **High pressure**	**JIPMER-1996**
Filtration takes place in – **Malpighian corpuscles**	**CG PMT-2005**
In 24 hours, total glomerular filtrate formed in human kidney is– **170 to 180 litres**	**WB JEE-2007, 2011 / MHT CET-2005**

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Role of Kidney Function	
In nephron the maintenance of acid and ionic balance is due to– **Tubular secretion**	**TS EAMCET-11.05.2023, Shift-I**
Kidney are located on either side of vertebral column between the– **Last (12th) thoracic and third lumbar vertebrae**	**TS EAMCET-11.05.2023, Shift-I**
Erythropoietin is produced by– **Peritubular cells of the kidney**	**AP EAPCET-11.07.2022 Shift-I, KVPY (SA) - 2018 / MHT CET-2018, AP EAMCET - 2014**
Volume of urine is regulated by– **Aldosterone and ADH**	**WB JEE-2010**
The hormone that helps in reabsorption of water from kidney– **ADH (Antidiuretic hormone)**	**Uttarakhand PMT-2004, Punjab MET-1999**
The blood vessels that in mammals would normally carry the largest amount of urea– **Hepatic vein**	**Haryana PMT-1999**
The net pressure gradient that causes the fluid to filter out of the glomeruli into the capsule is– **20 mm Hg**	**JIPMER-2007 CG PMT-2006**
The lining of intestine and kidneys in humans is– **Brush bordered**	**BVP-2012**
Renin is secreted by the cells of– **Juxtaglomerular apparatus**	**MHT CET-04.10.2020 Shift-I, MHT CET -2019, Kerala PMT-2008, Punjab MET-2008**
Heparin is synthesized in– **Liver**	**JIPMER-2010**
A pair of hormones produced by kidneys is– **Erythropoietin and calcitriol**	**MHT CET-2016**
Kidneys lie outside the peritoneum, hence they are called– **Retroperitoneal**	**MHT CET-2009**
Role of other organs in Excretion and Micturition	
In micturition– **Urethra relaxes**	**Punjab MET-1999 DUMET-2004, Manipal-2001 / BVP- 2001 / DUMET-2001**
Haemodialysis helps in patient having– **Uremia**	**Haryana PMT-2005**
Lysozyme that is present in perspiration, saliva and tears, destroys– **Certain types of bacteria**	**AIPMT-2007**
Tears contain which enzyme that act as antiseptic– **Lysozyme**	**JCECE-2002**
Haemoglobin is an example of – **Globular protein**	**Manipal-2002**
The process of expulsion of urine from urinary bladder is called– **Micturition**	**MHT CET-2006**
Part of nephron impermeable to salt– **Descending limb of loop of Henle**	**DUMET-2006**
The hydrostatic pressure of the blood while flowing in the glomerulus of nephron is– **60 mm Hg**	**TS EAMCET-15.05.2016**
Function of lacrimal glands is– **to secrete tears**	**CG PMT-2004**
We pass more urine in wet and cold season, because– **Sweating is much reduced**	**CG PMT-2004**
Disorders of the Excretory System	
The condition in which Kidneys fail to conserve water leading to water loss and dehydration due to impaired ADH synthesis or release is– **Diabetes insipidus**	**AP EAMCET-03.09.2021 Shift-I**
Name the condition when the concentration of ketone body increases in urine– **Diabetes mellitus**	**WB JEE-2010**
The hereditary disease in which the urine of a person turns black on exposure to air due to the presence of homogentisic acid is known as– **Alkaptonuria or black urine disease**	**AMU-1999**
Glycosuria is the condition, where a man– **Excretes sugar in urine**	**DUMET-2009**
Concentration of urea goes high in the blood because the tubules are not able to remove it from the blood is called- **Uraemia disorder**	**CMC Ludhiana-2007**
The disease that shows the blockage of kidney tubules and causes severe back pain– **Renal calculi**	**GUJCET-2015**

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17.

LOCOMOTION AND MOVEMENT

17.1 Types of Movement

- The amoeboid movement is found in– **Leucocytes, Macrophages**
- Passage of ova through female reproductive tract is facilitated by– **Ciliary movement**
- Movement shown by macrophages is– **Amoeboid**
- Pseudopodia is formed by– **Streaming of protoplasm**
- Some voluntary movements those result in a change of place or location are called– **Locomotion**
- Cytoskeletal elements are involved in amoeboid movement– **Microfilaments, Myofibrils**
- Non-locomotory movement is– **A person bending anteriorly**

17.2 Muscle

- Functional unit of involuntary muscle is– **Myofibril**
- The regulatory muscle protein having double helix structure– **Tropomyosin**
- Actin binding sites found on– **Myosin**
- During ..... chemical energy is changed to mechanical energy. **Muscle contraction**
- The store house of calcium in muscles is– **Sarcoplasmic reticulum**
- The cross arm that forms the cross bridges during muscles contraction, is formed by– **HMM**
- Smooth muscle is found in the walls all the hollow organs except - **Heart**
- Striations in the striated muscles are due to– **Specialized arrangement of myofilaments**
- Thick and dark is **Anisotropic band**
- A sarcomere is a movable structural unit within a myofibril bounded by- **Z lines**
- The axon terminals of a nerve cell and the sarcolemma of a skeletal muscle cell joins at the– **Neuromuscular junction**
- Structural protein ____ have enzymatic activity. **Myosin**
- Monomeric unit of actin filament is– **G-actin**
- Structurally cardiac muscles are– **Striated muscles**
- The type of muscle present in our– **Thigh is striated and voluntary**
- The skeletal muscle fibre is a 'syncytium' which means it is– **Multinucleated**
- The type of muscle fibre present in the wall of alimentary canal is– **Smooth muscle fibre**
- Dark bands are– **A-band**
- Sarcomere is– **Part between two z-lines**
- The functional unit of contractile system in a striated muscle is– **Sarcomere**
- Thin filaments are firmly attached to– **Z-line**
- Actin binding sites are located on– **Globular head**
- If a muscle undergoes rapid contraction and relaxation, the sarcoplasmic reticulum extension– **Requires constant plugging in and out of Ca^{2+}**
- The slow twitch muscle fibres ..... are rich in myoglobin and have abundant mitochondria are. **Red skeletal muscles**
- Myoglobin is present in– **All muscle fibres**
- Source of energy for muscle contraction is– **ATP**
- ..... protein masks active binding sites for myosin on actin filament. **Troponin**
- During muscle contraction, actin and myosin form– **Actomyosin**
- That ions help in muscle contraction is– **Ca^{++}**
- Upon stimulation of skeletal muscles, calcium is immediately made available for binding to troponin from– **Sarcoplasmic reticulum**
- In the resting muscle fibre, tropomyosin partially covers– **Myosin binding sites on actin**
- During contraction and relaxation of the striated muscle, which part of the sarcomere shows no change in length– **A - band**
- The cross bridges in a myofibril are formed by the heads of– **Myosin**
- In a skeletal muscle, bundles of muscle fibres are held together by– **Fascia**
- The functional unit of the contractile system in the striped muscle is– **Sarcomere**
- The maximum glycogen is– **Liver**
- Involved in muscle contraction are– **Ca^{2++} and Mg^{2+}**
- The dark bands (A-bands) of a skeletal muscle are known as– **Anisotropic bands**
- Myoglobin occurs in– **Red muscle fibres**
- Sarcomere is the distance between– **Two Z - lines**
- The protein present in thick filament is– **Myosin**
- ATPase needed for muscle contraction is present over– **Myosin**
- In the resting state, ... protein masks the active binding sites of actin filaments. **Troponin**
- Tropomyosin is moved away from the active site of actin, when– **Ca^{+2} binds to troponin**
- The central part of I band is– **Z-line**

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- In the middle of the sarcomere, thick filaments are attached to ------- in a skeletal muscle. **M-line**
- (a)-band is that part of sarcomere in which– **Both myosin and actin are absent**
- During muscle contraction– **Length of H band decreases**
- Globular head in a myosin filament is having active site for– **ATP, Actin**
- Red fibres are muscles rich in– **Myoglobin and mitochondria**
- During contraction of muscles– **Actin filament slide over myosin**
- The H-zone in the skeletal muscle fibre is due to– **The central gap between actin filaments extending through myosin filaments in the A-band**

17.3 Skeletal System

- ..... connects both coxal bones of pelvic girdle. **Cartilaginous joint**
- ..... bone is located at the base of the buccal cavity. **Hyoid bone**
- Part of the body having a single pair of bones– **Pelvic girdle**
- Glenoid cavity is found in– **Pectoral girdle**
- The joint between sternum and the ribs in humans– **Cartilaginous joint**
- The clavicle or collar bone articulates with– **Acromian process**
- Stimulation of a muscle fibre by a motor reuron occurs at– **The neuro-muscular junction**
- The H-zone in the skeletal muscle fibre is due to– **The Central gap between actin filaments extending through myosin filaments in the A-band**
- Head of humerus bone articulates with glenoid cavity of pectoral girdle– **True**
- Correct sequential order of vertebrae in the vertebral column of human beings– **Cervical–thoracic–lumbar–sacral–coccygeal**
- The joint of femur with pelvic girdle is– **Ball and socket joint**
- The joint of radio-ulna with the upper arm is– **Hinge joint**
- Joint which permits only limited movements are– **Cartilaginous joints**
- The joints between the carpal bones are– **Gliding joints**
- Certain part of a normal human skeleton is– **Parietal bone and the temporal bone of the skull are joined by fibrous joint**
- That is the name of joint between adjacent vertebrae in a vertebral column– **Cartilaginous joint**
- The adult human being has a number of bones known as the ear ossicles– **6**
- Skull of man is– **Dicondylic**
- Number of cervical vertebrae in most mammals is– **7**
- Formula of vertebral column in humans is– **$C_7T_{12}L_5S_{(5)}C_{(4)}$**
- Lumbar vertebrae are found in– **Abdominal region**
- U-shaped bone present at base of buccal cavity is– **Hyoid**
- ..... vertebra is formed from four vertebrae. **Coccyx**
- 11^{th} and 12^{th} pair of ribs which are imperfectly formed and do not reach the sternum are called– **Floating ribs**
- The scapula is a large triangular flat bone situated in the dorsal part of the thorax between– **Second and seventh rib**
- Appendicular skeleton includes– **Girdles and their limbs**
- The bones form a link between axial and appendicular skeleton– **Clavicle**
- Humerus with its rounded upper end (head) articulates into– **Glenoid cavity**
- The shoulder blade is made of– **Scapula**
- Collar bone is known as– **Clavicle**
- Acetabulum is located in– **Hip bone**
- A cricket player is fast chasing a ball in the field. Bones which is directly contributing in this movement– **Tarsals, femur, metatarsals, tibia**
- Forelimb bone is– **Humerus**
- The form of thoracic cage of man– **Ribs and sternum**
- Number of vertebrae in human skeleton is– **33**
- Axial skeleton mainly constitute– **Skull, vertebral column, sternum and ribs**
- Number of bones in human body is– **206**
- Number of bones present in human cranium is– **8**
- The part of pectoral girdle is– **Glenoid cavity**
- Each half of pelvic gridle is made of– **Ischium, Ilium, Pubis**
- Ribs are attached to– **Sternum**
- Number of bone present in an arm is– **30**
- Ilium is part of– **Pelvic girdle**
- Biceps is attached with– **Radius, Scapula**
- Coccygeal bone occurs in– **Vertebral column**
- In mammals the lower jaw is made of– **Mandible**
- Number of bone in hindlimb of human is– **30**
- Bone of skull is– **Pterygoid**
- ..... structure protects the spinal cord, supports the head and serves as the point of attachment for the ribs and musculature of the back. **Vertebral column**
- Total number of bones found in human skull is– **22**
- Vertebrae are fused– **Sacrum**
- The movable skull bone is– **Mandible**
- Hyoid occurs in– **Skull**

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- Ribs are present in human beings– **12 pairs**
- The first cervical vertebra is- **Atlas**
- Number of bones in cranium, face, hyoid, middle ear respectively is– **8, 14, 1, 3**
- Socket in pelvic girdle in which head of femur articulates, is formed by fusion of– **Ilium, ischium and pubis**
- In humans, coccyx is formed by the fusion of vertebrae– **4**
- Part of pelvic girdle joined by transverse process is– **Acetabulum**
- Ribs has two articulation surfaces on its dorsal end, hence called– **Bicephalic**
- Shape of the hyoid bone– **U – shape**
- Each limb in human body possess– **30 bones**
- Bone is present in pair– **Coxal bone**
- Cartilage can be observed in the joint in between the– **Vertebra**
- Bone does not participate in cranium– **Zygomatic**
- Vertebra articulates with the occipital condyles– **Atlas**
- Total number of cervical vertebra in human is ..... out of which the second is ..... **7, Axis**
- Vertebrochondral ribs in human– **Join the 7th rib**
- Floating ribs are ..... pairs and attached to ..... only. **2, Vertebra**
- Pectoral girdle consists of– **4 bones**
- Acromian process is the part of bone, which belongs to– **Pectoral Girdle**
- Clavicle (or collar bone) articulates with an expanded process of ..... bone. **Scapula**
- .....forms the main frame work of the trunk– **Vertebral column**
- Synovial joints occurs in between– **Humerus and ulna**
- Ball and socket joints can be seen in– **Shoulders**
- Synovial fluid is present in– **Freely movable joints**
- Joints are lubricated by– **Synovial fluid**
- .....joint helps in locomotory movements– **Synovial joints**
- Joint between metacarpals and phalanges is– **Hinge**
- Synovial joint is– **Ball and socket joint, Pivot joint, Hinge joint**
- Joints of hips and shoulder are– **Ball and socket joints**
- Joints are the points of contact between– **Bones and cartilages**
- Joints shown by the flat skull bones are– **Fibrous joints**
- Hinge joint occurs between– **Humerus and radio-ulna**

17.4 Disorders of Muscular & Skeletal Muscle

- Lack of relaxation between successive stimuli is sustained muscle contraction is– **Tetanus**
- Myasthenia gravis affecting neuromuscular junction is a– **Auto-Immune Disorder**
- Chronic autoimmune disorder affecting neuromuscular junction leading to fatigue, weakening and paralysis of skeletal muscle is called as– **Myasthenia gravis**
- Arthritis – Inflammed joints– **True**
- Lack of relaxation between successive stimuli in sustained muscle contraction is known as– **Tetanus**
- Progressive degeneration of skeletal muscle due to genetic disorder occurs in– **Muscular dystrophy**
- The accumulation of uric acid crystals in the region of joints resulting in painful movements causes–**Gout**
- Decrease in bone mass and higher chances of fractures with advancing age leads to– **Osteoporosis**
- Gout is caused due to the accumulation of– **Uric acid crystals**
- Decreased levels of estrogen is a common cause of– **Osteoporosis**
- Rapid spasms in muscle caused due to– **Low calcium ions**

17.5 Miscellaneous

- Ribs are attached to– **Sternum**
- .....type of movable joint present between the atlas and axis. **Pivot**
- ATPase of the muscle is located in– **Myosin**
- Intervertebral disc is found in the vertebral column of– **Mammals**
- Knee joint and elbow joints are examples of– **Hinge joint**
- Macrophages and leucocytes exhibit– **Amoeboid movement**
- Muscles with characteristic striations and involuntary are– **Muscles of the heart**
- Chronic auto immune disorder affecting neuromuscular junction leading to fatigue, weakening and paralysis of skeletal muscle is called as– **Myasthenia gravis**
- .....muscular disorder is inherited– **Muscular dystrophy**
- Calcium is important in skeletal muscle contraction because it– **Binds to troponin to remove the masking of active sites on actin for myosin**

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EXAM POINT

Types of Movement and locomotion	
The long non motile cilia like processes present in the epididymis are– **Stereocilia**	**TS EAMCET-11.05.2023, Shift-I**
The function of parapodia is– **Swimming**	**TS EAMCET-31.07.2022 Shift-II**
Acronematic flagella are seen in– **Chlamydomonas**	**AP EAMCET-24.09.2020 Shift-I**
The amoeboid movement results from– **Interactions among actin, myosin and ATP, etc.**	**AMU-2015**
Folding and unfolding of actin and myosin leads to amoeboid movement. This is hypothesized by– **Goldacre and Lorsch**	**AP EAMCET-2005**
The type of movement that is present in *Mimosa pudica*– **Seismonastic**	**Rajasthan PMT-1996**
The function of hydrostatic skeleton is– **Locomotion**	**Rajasthan PMT-1996**
In rotation type of cyclosis, the cytoplasmic matrix flows in– **One direction**	**CG PMT-2007**
A cricket player is fast chasing a ball in the field. The groups of bones that are directly contributing in this movement – **Tarsals, femur, metatarsals, tibia**	**AIIMS-2006**
The Muscles and It's Types	
The largest muscle in the human is– **Gluteus maximus**	**JIPMER-2016 / UP CPMT-2006 / BVP-2000**
The strongest muscle in the human is– **Masseter**	**JIPMER-2015**
The type of muscles present in our thigh are – **Striated and voluntary**	**AIPMT (Mains)-2011**
It is the longest muscles that brings thigh near mid line– **Sartorius muscle**	**Rajasthan PMT-1996**
Striped muscles are– **Cylindrical, Syncytial and Unbranched**	**Manipal-2012 / AFMC-2002 / CG PMT-2005**
What will happen if ligaments are cut or broken– **Bone will become unfixed**	**AMU-2007**
During an injury nasal septum gets damaged, for its recovery, the cartilage is preferred– **Hyaline cartilage**	**AMU-2007**
Ensheathing of muscles is called– **Fascia**	**JIPMER-2001**
That structure acts as a shock absorber to cushion when tibia and femur came together. **Cartilage**	**CME Vellore-2010, AMU-2009**
Slow muscle fibres are found in– **Leg**	**HP CET-2011 / VMMC-2005 / AMU-2004**
In hurdle race, ……. is accumulated in the leg muscle. **Lactate**	**DUMET-2009**
Organ of Golgi is the sensing structure formed at the junction of– **Muscles and tendon**	**VMMC-2008**
The red muscles are red in colour as they contain the pigment– **Myoglobin**	**Tripura JEE-2022**
Muscles which bend the joint– **Flexor**	**Manipal-2010, AIPMT-1996**
The protoplasmic segment of a striated muscle fibre is termed as– **Sacroplasm**	**CG PMT-2010, AIIMS-1995**
Skeletal muscles are controlled by– **Somatic nervous system**	**AIIMS-25.05.2019 Shift-I**
Intercalated discs are characteristic of muscles found in– **Heart**	**AIIMS-2013**
In smooth and cardiac muscles, cell junctions are represented by – **Gap junction**	**AIIMS-27.05.2018 Shift-I**
Quadriceps and gastrocnemius muscles lie in– **Legs**	**CG PMT-2005**
The stored food material found in muscles is– **Glycogen**	**CG PMT-2005**
Red Muscle has– **More mitochondria**	**BCECE-2015**
The main difference between white and yellow fibres is of– **Protein, Color of fibres**	**WB JEE-2007**
Epimysium, perimysium and endomysium are found in– **Striated muscle**	**BVP-2009 / VMMC-2009**
Muscles of the heart are– **Striated, branched and involuntary**	**AP EAMCET-05.10.2021 Shift-I**

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Sarcolemma is a membrane found over–	**Skeletal muscle fibre**	**Rajasthan PMT-2003**
The unstriped muscles are found in–	**Stomach, Urinary bladder**	**Rajasthan PMT-2001, 1995**
Gastrocnemius muscle is found attached in–	**Shank**	**BVP-2011**
Alary muscle is associated with–	**Heart and circulation**	**Rajasthan PMT-2005**
Largest smooth muscle is present in–	**Uterus of pregnant woman**	**Rajasthan PMT-2005**
Structure of Muscle and It's Protein		
Sarcomere is the functional unit of contraction in a muscle fibre. The myofibril that constitute a sarcomere–	**The portion of myofibril between two successive 'Z' line**	**Karnataka CET-2016**
The most abundant protein in the animal world–	**Collagen**	**AIPMT (Screening)-2012**
Sarcoplasmic reticulum of the muscle fiber stores–	**Calcium ions**	**AP EAMCET-12.07.2022 Shift-II**
Colour blindness is due to defect in–	**Cones**	**WB JEE-2010**
Troponin is a–	**Muscle protein**	**BCECE-2011**
Rigidity that develops in the muscle after death is known as–	**Rigor mortis**	**Manipal-2011**
Skeletal muscles show resemblance with visceral muscles in one aspect. It is in–	**Presence of actin and myosin filaments**	**JIPMER-1998**
The forms that thick filament of muscles–	**Myosin**	**UP CPMT-2012**
In the resting muscle fibre, tropomyosin partially covers–	**Myosin binding sites on actin**	**AMU-2010**
Binding of ATP to myosin required the cofactor–	**Ca**	**AMU-1999**
The horn of Rhinoceros are composed of –	**Keratin**	**Haryana PMT-1999**
The important muscle proteins that help in movement are–	**Actin and myosin**	**AMU-2012**
A rabbit runs very fast but after some time feel tired, because–	**Formation of lactic acid in muscles**	**CG PMT-2010**
Iron storing protein is–	**Ferritin**	**CG PMT-2010**
Contractile protein of muscles are-	**Actin and myosin**	**BCECE-2009**
Actin and myosin proteins are related with–	**Muscle contraction**	**BVP-2001**
The 'thick' filament in muscles are polymerized proteins of–	**Meromyosin**	**Kerala PMT-2012**
The H-zone in the skeletal muscle fibre is due to–	**The central gap between actin filaments extending through myosin filaments in the A-band**	**AIIMS-2016 / NEET-2013**
The protein that can convert chemical energy in the ATP molecules into mechanical energy–	**Myosin**	**AP EAPCET-11.07.2022 Shift-I**
The globular head of myosin contains–	**ATPase enzyme**	**JIPMER-2017**
Regulatory proteins in a myofibril are–	**Actinin, Troponin, Tropomyosin**	**AP EAMCET-25.04.2018 Shift-I**
Fibrous membrane that held the thick filaments of A-band of a myofibril is–	**M – line**	**TS EAMCET-30.07.2022 Shift-I**
The monomeric actin is called–	**G-actin**	**BCECE-2015**
Substance that accumulates in the fatigued muscle is–	**Lactic acid**	**BVP-2011 / HP CET-2018, TS EAMCET-09.08.2021 Shift-II**
Creatinine is formed metabolically from–	**Arginine**	**CMC Vellore-2011**
The striated appearance of a myofibril is due to the distribution pattern of–	**Actin and myosin**	**Kerala PMT-2014**
Mechanism of Muscle Contraction		
Hensen's disc in a myofibril is less than the edges of the A-band due to–	**Presence of thick filaments only**	**TS EAMCET-10.05.2023, Shift-II**
Repeated activation of skeletal muscle leads to–	**Accumulation of lactic acid**	**AP EAMCET-11.07.2022 Shift-II**
Ions that must be present for binding the cross bridges is–	**Ca^{2+}**	**AMU-2009**

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The functional unit of myofibril is made up of– **Complete A-band and two half I-band**	**GUJCET-2017**
The lactic acid generated during muscles contraction is converted to glycogen in– **Liver**	**AP EAMCET-2005**
It is important for muscle contraction and nerve impulse transmission– **Ca^{2+} ions**	**JIPMER-2009 / VMMC-2012, UP CPMT-2012, 2008 / AMU-2006, AP EAMCET - 2001 / JCECE-2010, UP CPMT - 2012 / Rajasthan PMT-2008**
The part of sarcomere that both thick and thin filaments are present in– **'A' band on either side of 'H' zone**	**AP EAMCET-06.09.2021 Shift-I**
During muscle contraction length of A-band– **remains constant**	**NEET (Karnataka)-2013 / CMC Vellore-2008, WB JEE-2007 / AP EAMCET-2006, AIPMT-2001 / BVP-2014**
Unit of contraction– **Sarcomere**	**UP CPMT-2013 / UP CPMT-2010, AIPMT-1998 / HPCET - 2018, JIPMER-2011 / Punjab MET - 2010, J&K CET-2003, 2004**
Sarcomere is defined as the region between – **Two Z-lines**	**AIPMT-2001**
The sliding filament theory of muscle contraction was proposed by– **A. F. Huxley and H.E. Huxley**	**BVP-2012 / MGIMS Wardha-2007**
ATPase enzyme needed for muscle contraction is located in– **Myosin**	**AIPMT-2004 / BHU PMT (Mains)-2010, Manipal-2007 / CG PMT-2006**
In human, muscular coordination is controlled by– **Cerebellum**	**CG PMT-2006**
A narrow dark line seen in Isotropic band of myofibril of a striated muscle fibre is called– **Z-line**	**MHT CET-06.10.2020 Shift-I**
During muscle contraction actin and myosin form– **Actomyosin**	**Manipal - 2001 / AIIMS-1995**
The function(s) of calcium is– **Blood clotting, Muscular contraction, Nerve conduction**	**JIPMER-2018**
Sliding filament theory can be best explained as– **Actin and myosin filaments do not shorten, but rather slide pass each other**	**JIPMER-2017**
Cross bridges between actin and myosin is broken up by – **Binding of ATP of the myosin head**	**AIIMS-27.05.2018 Shift-II**
The contraction of the muscle continues in sliding filament theory– **Till Ca^{2+} is present in sarcoplasm**	**AIIMS-2017**
Myosin head separates from actin when– **ATP attached to myosin head**	**AIIMS-26.05.2019 Shift-I**
There is no change in muscle length during contraction, it is called– **Isometric**	**JCECE-2002**
A-band in skeletal muscle doesn't contain– **Z line**	**TS EAMCET-29.09.2020 Shift-II**
The immediate energy source of muscle contraction– **ATP**	**Rajasthan PMT - 2003, JIPMER-2002, Haryana PMT - 2001**
In a striated myofibril, the F-actin of thin filament is formed by– **G-actin**	**TS EAMCET-09.08.2021 Shift-I**
Skeletal System	
Cells involved in mineralization and demineralization of the bone respectively are called– **Osteoblasts and osteoclasts**	**TS EAMCET 10.05.2023 Shift-I**
It is present between the adjacent bones of the vertebral column– **Cartilage**	**NEET-2022**

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In rabbit, end of a long bone is connected in another by–	**Ligaments**	**JIPMER-2009**
Pelvic girdle of rabbit consists of–	**Ilium, ischium and pubis**	**UP CPMT-2002 / VMMC-2007**
X-rays are used in–	**Examine most areas of the body**	**JIPMER-2005**
Elephant tusk shell is–	**Dentalium**	**Rajasthan PMT-1999**
The vertebral formula of human is–	**$C_7, T_{12}, L_5, S_5, C_4$**	**GUJCET-2018, 2019**
The paired bone is present in the skull–	**Parietals bones**	**GUJCET-2017**
Neural canal is present in–	**Vertebral column**	**UP CPMT-2005**
The largest sesmoid bone in human body is –	**Patella**	**UP CPMT-2014 / MGIMS Wardha-2014, BVP-2013 / Haryana PMT-2009, 1999**
The main difference between bone and cartilage is of–	**Haversian canals**	**UP CPMT-2011**
An acromion process is characteristically found in the–	**Pectoral girdle of mammals**	**JIPMER-2007 / CG PMT-2006 / AIPMT-2005**
Bone related with skull is–	**Pterygoid**	**AIPMT-2000**
The name of joint between ribs and sternum–	**Cartilaginous joint**	**AIPMT-2000**
Number of bones in hind limb of man–	**30**	**AIPMT-1998**
Sigmoid notch is present in–	**Ulna**	**UP CPMT-2006, 2005**
Volkmann's cannals occur in–	**Bones of mammals**	**Karnataka CET-2004**
In a vertebrate the germs layer that forms the skeleton muscles–	**Mesoderm**	**UP CPMT-2004 / MGMIS Wardha - 2004, HP CET-2011**
The ribs that show bucket- handle type of movement–	**Rib no. 7-10**	**WB JEE-2010**
Astragalus and calcaneum are present in–	**Hind limb**	**Punjab MET-1999 / Haryana PMT - 1999**
The number of floating ribs, in the human body, is–	**2 pairs**	**AFMC-2000 / AIPMT-1995**
Acetabulum is a concave surface of–	**Pelvis**	**UP CPMT-2010**
The number of occipital condyles in man is/are–	**Two**	**VMMC-2013**
The scapula is a large triangular flat bone situated in the dorsal part of the thorax between–	**Second and seventh ribs**	**VMMC-2013**
Haversian systems are found in the bones of–	**Mammals**	**Karnataka CET-2002 / JIPMER-1997, VMMC-2008 / BCECE-2003**
Disadvantage of MRI is its inability to image–	**Bone**	**DUMET-2010**
The correct order of vertebrae is–	**Cervical, thoracic, lumber, sacral**	**UP CPMT-2012**
The lumbar region of the vertebral column in man in made up of –	**5 vertebrae**	**Kerala PMT-2015**
Bones of pelvic girdle forms a cavity the head of that the femur is fitted are–	**Ilium, ischium and pubis**	**VMMC-2008 / AMU-2008 / Rajasthan PMT-1998**
Biceps are attached with–	**Radius, Ulna**	**Rajasthan PMT-1998**
This is common to kidney and skeleton in mammals–	**Pelvis**	**Uttarakhand PMT-2009**
Total number of bones found in human skull is–	**29**	**VMMC-2006**
Axis vertebra is identified by–	**Odontoid process**	**CG PMT-2007**
Glenoid cavity is found in–	**Pectoral girdle**	**CG PMT-2007 / JIPMER-2000, DUMET-2007 / MGIMS Wardha-2009, CG PMT-2009 / AIPMT-1994 / DUMET-2008**
Part of body having a single pair of bones–	**Pelvic girdle**	**Haryana PMT-2002**
The type of cartilage that is found intervertebral disc of mammal–	**Fibrous cartilage**	**CG PMT-2009 / AIIMS-1995**
Acetabulum is a part of–	**Pelvic girdle**	**Haryana PMT-2004**
Number of bones of face is–	**14**	**Manipal-2013**
Number of vertebrae in human skeleton is–	**33**	**VMMC-2008 / AMU-2008**

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Total number of bones in child is–	**300**	**Haryana PMT-1999**
The joint between atlas and odontoid process of axis in rabbit is–	**Pivot type**	**AP EAMCET-2001**
Total number of bones found in right upper limb is–	**30**	**AFMC-2004**
Nucleus pulposus is found in–	**Intervertebral disc**	**AFMC-2004**
The salts predominates in bone matrix–	**Calcium phosphate**	**AMU-2012 / AFMC-2001**
Acromion process is found in rabbit in–	**Pectoral girdle**	**CG PMT-2006**
Space in the jaw bone unoccupied by teeth is called–	**Diastema**	**JIPMER-2013**
Yellow bone marrow is found specially in the medullary cavity of-	**Long bones**	**JIPMER-2013**
Caudal vertebrae of man are united to form a single–	**Coccyx**	**MGIMS Wardha-2011**
Number of cervical vertebra in mammals is–	7	**BHU PMT (Screening)-2011**
Spinal cord is protected by–	**Vertebral column**	**Haryana PMT-2003**
The number of bones in each half of the lower jaw of a mammal is–	**1**	**AP EAMCET-1997**
In the body, the membrane surrounding the bone is known as–	**Periosteum**	**AFMC-2006 / JCECE-2007**
The bones of old person become brittle due to accumulation of–	**Calcium**	**CG PMT-2011**
Bone dissolving cells are–	**Osteoclasts**	**CG PMT-2011**
The major constituent of vertebrate bone is–	**Calcium phosphate**	**CG PMT-2010 / AIIMS-1996**
Three bones scapula, clavicle and coracoid enclose and meet at–	**Foramen of triosseum**	**BVP-2013**
Long neck of camel is because of–	**Bony plate between two vertebrae**	**BVP-2013**
Foramen obturator is present between–	**Ischium and pubis**	**BVP-2013**
The number of occipital condyles in mammals is–	**2**	**AP EAMCET-2000**
Deltoid ridge is present in–	**Humerus**	**VMMC-2007**
The wish-bone or Merry though bone of birds is–	**Clavicle**	**Manipal-2010**
Tendons and ligaments are kind of–	**Connective tissue**	**AFMC-2010**
Pectoral girdle constitute–	**Scapula and clavicle**	**AFMC-2010**
Fabellae (bones) are associated with–	**Knee joint**	**CMC Ludhiana-2007**
The bone of the knee cap is called–	**Patella**	**BCECE-2009**
Pterygoid is a bone of –	**Skull bone**	**CMC Ludhiana-2008, AMU - 2007**
Cranium is the protective covering of–	**Brain**	**AMU-2003**
In man, coccygeal bone is formed by the fusion of …….. vertebrae.	**4**	**Uttarakhand PMT-2011**
The smallest bone in human body is–	**Stapes**	**Assam CEE-2014**
Haversian canal are found in–	**Long bone of mammals**	**BVP-2004, DUMET - 2003**
Human ear ossicle are–	**Incus, malleus and stapes**	**HP CET-2018**
The longest bone of the human body is–	**Femur**	**Kerala PMT-2009**
Calcium is important in skeletal muscle contraction because it–	**Binds to troponin to remove the masking of active sites on actin for myosin**	**NEET-2018**
The contractile protein of skeletal muscle involving ATPase activity is–	**Myosin**	**AIPMT-2006**
The shoulder blade is made of –	**Scapula**	**AIIMS-2007**
Neural canal is present in–	**Vertebral column**	**JIPMER-2006**
From outer to insider the sequence of three bones present in the middle ear of mammals is–	**Malleus, incus and stapes**	**JIPMER-2008**
Atlas is–	**1st cervical vertebrae**	**JIPMER-2019**
The cervical vertebrae in human is–	**Same as in whale**	**AIPMT-1993**
Long bones function in–	**Support, erythrocyte and leucocyte synthesis**	**AIPMT-1993**
A fractured coracoids process would involve the–	**Scapula**	**BCECE-2015**
The coxal of the pelvic girdle is formed by the fusion of–	**Ilium, ischium and pubis**	**Kerala PMT-2011**
Scapula is a large triangular flat bone situated in the dorsal part of the thorax between–	**The second and seventh ribs**	**Kerala PMT-2011**

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The hormones involved in maintaining calcium balance in the human body are–	**PTH and TCT**	**Karnataka CET-2017**
Brain lies in–	**Cranium**	**JIPMER-2002**
The clavicle articulates with _____ of scapula.	**Acromion process**	**DUMET-2011**
Haversian canals are present in–	**Bone matrix**	**AP EAMCET-1998, VMMC-2004**
Immature bone cells are called–	**Osteoblasts**	**TS EAMCET-12.05.2017**
The long bones which are solid may be eaten up by special cells and make them hollow. These cells are–	**Osteoclasts**	**BVP-2006**
Axis vertebra is identified by–	**Odontoid process**	**BVP-2009**
Difference between bone and cartilage is–	**Haversian canal, Blood vessel, Lymph vessel**	**Rajasthan PMT-2005**

Joints and Its types

Non fibrous joints is–	**Synchondrosis**	**AP EAPCET-23.05.2023, Shift-I**
Which type of cartilage is found in sternal part of the ribs, epiphyseal plate, endoskeleton of cyclostomes–	**Hyaline cartilage**	**AP EAPCET-22.05.2023, Shift-II**
The polysaccharide portion of a proteoglycan present in the matrix of cartilage is known as–	**Chondroitin**	**AMU-2007 AIPMT -2000**
Tendon consist of–	**Only collagen fibres**	**AIPMT-1999**
The type of joint that is characterized by the presence of a fluid filled cavity that plays a significant role in locomotion–	**Synovial joints**	**VMMC-2011**
Inter-phalangeal joints are also called as–	**Hinge joints**	**BVP-2010**
The joint of radio-ulna with the upper arm is–	**Hinge joint**	**HP CET-2012 / Rajasthan PMT-2011, Uttarakhand-2005 / Punjab MET-2003**
The example of pivot joint is–	**Radio-ulna joints**	**VMMC-2013 / DUMET-2010**
Gliding joint is present between the–	**Carpals**	**Kerala PMT-2015**
Elbow joint is–	**Hinge joint**	**AIPMT - 2009 CMC Ludhiana-2008 AMU-2007, JIPMER-1995**
Humerus fits into glenoid cavity is an example of–	**Ball and socket joint**	**Manipal-2015**
There are ……. pairs of cranial nerves arising from the brain of human beings–	**12**	**J&K CET-2015**
The gliding Joints are important for gliding movements. The example of such a joint is between the–	**Zygapophyses of adjacent vertebrae**	**HP CET-2011 / VMMC-2005 / AMU-2004**
If ligaments are torn–	**Bone less movable at joint and pain**	**JIPMER-2013**
Types of saddle joints can be traced in human body–	**2 joints**	**AFMC-2011 / BHU PMT (Screening)-2011**
The type of synovial joint that is absent in frog but is responsible for movement of thumb in many direction in mammals–	**Saddle joint**	**BVP-2013**
Ball and socket joint is found between–	**Humerus and pectoral girdle**	**AFMC-2001**
The type of joint between carpals and between tarsals is–	**Gliding joint**	**CMC Ludhiana-2015**
The joint of the hip and shoulders are called–	**Ball and socket joint**	**J&K CET-2002**
The types of synovial joints that is the most freely movable–	**Ball and Socket**	**HP CET-2018**
Glenoid cavity articulates–	**Humerus with scapula**	**AIPMT-2015**
The joints that would allow no movement–	**Fibrous joint**	**AIPMT (Re-Exam)-2015**
The pivot joint between atlas and axis is a type of–	**Synovial joint**	**NEET-2017**
The type of joint between the human skull bones is called–	**Fibrous joint**	**AIPMT-1994 / AMU-2002**
Synovial fluid is found in cavities of–	**Synovial joint**	**J&K CET-2000**
The structures that join two bones at joints are made up of–	**Elastic fibres**	**Uttarakhand PMT-2010**

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The joint between humerous and ulna is–	**Hinge joint**	**Rajasthan PMT - 2003 / JIPMER-1996**
Fiberous tissue which connect bone to bone is–	**Ligaments**	**Rajasthan PMT-1999**
The ankle, knee and elbow joints are–	**Hinge joints**	**J&K CET-2010**
The joint of femur, with pelvic girdle, is–	**Ball and socket joint**	**VMMC-2004**

Disorders of Muscular and Skeletal System

Breakdown of muscle proteins, redistribution of body fat, round face, buffalo hump on the back are the symptoms of–	**Cushing's syndrome**	**TS EAMCET-30.07.2022 Shift-I**
Women in their post menopause are likely to suffer from–	**Osteoporosis**	**AP EAMCET-03.09.2021 Shift-I**
Chemical ions responsible for muscle contraction are–	**Ca^{2+} and Mg^{2+}**	**UP CPMT-2011**
Lack of relaxation between successive stimuli in sustained muscle contraction is known as–	**Tetanus**	**NEET-2016 Phase-I**
Low Ca^{++} in the body fluid may be the cause of–	**Tetany**	**AIPMT (Screening)-2010**
An autoimmune disease is–	**Myasthenia gravis**	**JIPMER-2015, NEET (Karnataka)-2013**
Symptoms of Lathyrism–	**Muscular dystrophy and paralysis**	**AIPMT-1998**
Progressive degeneration of skeletal muscle, mostly due to genetic disorder occurs in–	**Muscular dystrophy**	**AP EAMCET-2011**
Osteomalacia is a disease caused by the deficiency of–	**Calciferol**	**WB JEE-2009**
A disease associated with pain and swelling is–	**Arthritis**	**BCECE-2011**
Pannus formation occurs in–	**Rheumatoid arthritis**	**Tripura JEE-2018**
In myasthenia gravis, acetylcholine–	**Receptors on motor end plate are reduced**	**AMU-2010**
Gout is a disease that affects the joints and leads to arthritis. It is associated with abnormality of–	**Purine metabolism**	**Manipal-2015**
Deficiency of calciferol causes–	**Rickets**	**Haryana PMT-1999**
Both gout and kidney stone formation is caused by–	**Uric acid**	**KVPY SA-2014**
Lathyrism due to the consumption of khesari dal is characterised by–	**Skeletal deformation and thinning of collagen fibers**	**VMMC-2015**
Osteoporosis, an age-related disease of skeletal system, may occur due to–	**Accumulation of uric acid leading to inflammation of joints**	**NEET-2016 Phase-II**
The muscular disorders which is inherited–	**Muscular dystrophy**	**NEET-2019**
Abnormal growth of the bones especially of the face bones leads to–	**Acromegaly**	**AP EAPCET-12.07.2022 Shift-I**
Auto-immune disorder for cholinergic receptors is–	**Myasthenia gravis**	**SRM JEEE -2017**
Knock knee disease is due to–	**Excess fluoride concentration in water body**	**AIIMS-1996**
Acidic pH muscles is due to–	**Lactic acid**	**AIIMS-26.05.2019 Shift-I**
In old age, stiffness of joints is due to the–	**Decrease in synovial fluid**	**AIIMS-2015**
Haversian canals occur in	**Humerus**	**AIPMT-1989**
The biomedical technique used to analyse skull fractures is–	**CT Scan of head**	**AP EAMCET-28.04.2017 Shift-I**
The main cause of paralysis is–	**Complete destruction of motor nerves**	**CG PMT-2005**
This is diagnosed by the presence of a type of IgM–	**Rheumatoid arthritis**	**BCECE-2015**
Metha Jahar which is useful in rheumatism is obtained from–	**Aconitum napellus**	**WB JEE-2007**
Muscle fatigue is due to–	**Lactic acid**	**Manipal-2005**
Loss of calcium due to lack of reabsorption causes–	**Osteoporosis**	**TS EAMCET-12.05.2017**
The disease that occurs in mature adult human being due to deficiency of calciferol is–	**Osteomalacia**	**WB JEE-2014**
An epidemic bone softening disease Itai-ltai first recognized by–	**Japan in 1960**	**HP CET-2011, BVP-2003**

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18.

NEURAL CONTROL AND COORDINATION

18.1 Human Neural System

- In vertebrate ___ responsible for maintenance of balance when organism is in motion. **Semicircular canal**
- During the propagation of a nerve impulse, the action potential results from the movement of– **Na^+ ions**
- During rest, sodium pump of a nerve result in– **More Na^+ pumped out than K^+ ions taken in**
- The act is responsible for the depolarisation of the neuron– **Opening of voltage gated Na^+ channel**
- If the inside of membrane becomes more negative it leads to– **Hyperpolarisation**
- Axon endings release from its synaptic vesicles, a neuro-transmitter substance known as– **Acetylcholine**
- Action potential is also termed as– **Nerve impulse**
- On application of a stimulus on the axonal membrane– **There is a rapid influx of Na^+ at that site**
- A synapse is formed by– **Pre-synaptic membrane, Post-synaptic membrane & Synaptic cleft**
- The receptors of neurotransmitters are present on the– **Post-synaptic membrane**
- The autonomic neural system is a division of– **Peripheral neural system**
- Resting membrane potential is maintained by– **Ion leaks and ion pumps**
- Neurotransmitters contains is– **Synaptic vesicles**
- Unmyelinated nerve fibres are found in– **Autonomous neural system, Somatic neural system**
- In a neuron, Nissl's granules are present in– **Cell body, Dendrite**
- Type of neuron present in embryonic stage is– **Unipolar**
- Multipolar neurons are present in– **Cerebral cortex**
- Neuron in which cell body has one axon and one dendrite is called– **Bipolar**
- In a medullated nerve fibre, the conduction of impulse is faster due to the presence of– **Myelin sheath and nodes of Ranvier**
- That part of neuron terminates into a bulb-like structure, present at – **Axon**
- Node of Ranvier is a gap that occurs between two– **Myelin sheaths**
- Unidirectional transmission of a nerve impulse through nerve fibre is due to the fact that– **Neurotransmitters are released by the axon endings and not by dendrites**
- A nerve fibre during resting stage is– **More permeable to K^+**
- Sodium-potassium pump transports– **K^+ into the neuron and Na^+ out of the neuron**
- In the resting state of the neural membrane, diffusion due to concentration gradients, if allowed, would drive– **Na^+ into the cell**
- The electrical potential difference between outside and inside of a nerve axon before excitation is known as– **Resting potential**
- ..... is common for both cell body and dendrites. **Nissl's granules**
- During depolarisation, the outer surface of the membrane becomes– **Negatively charged**
- Depolarisation of axolemma during nerve conduction takes place because– **Na^+ move inside**
- During the transmission of nerve impulse through a nerve fibre, the potential on the inner side of the plasma membrane has which type of electric charge– **First negative, then positive and again back to negative**
- Saltatory conduction of impulse occurs in– **Myelinated nerve fibres**
- Visceral nervous system is part of– **PNS**
- Afferent nerve fibre carries impulses from– **Receptor to central neural system**
- Skeletal muscles are innervated by– **Somatic nerves**
- Regulatory impulses are transmitted by– **Efferent nerve fibres**
- ..... transmits impulses from CNS to the involuntary organs and smooth muscles of the body. **Autonomic neural system**
- Autonomous neural system controls involuntary actions. It includes– **Peristalsis of the intestine**

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- Visceral nervous system comprises of– **Ganglia**
- In which animal, nerve cell is present but brain is absent– **Hydra**
- The structural and functional unit of nervous system is– **Neuron**
- Meant by coordination is– **Two or more organs interact**
- Somatic neural system carries impulses from– **Central nervous system to skeletal muscles**
- An autonomic nervous system has– **Paired chain ganglia**
- CNS includes– **Brain and spinal cord**
- Sympathetic nervous system is a part of– **ANS**
- Body coordination is maintained by– **Nervous system, Endocrine system**
- CNS is mostly made of– **Association neurons**
- Action potential of a nerve cells is created by– **Na^+**
- Neurons are divided into three major types– **Based on the number of axons and dendrites**
- Each branch of axon terminates as a bulb-like structure called– **Synaptic knob**
- Conduction of nerve impulse to other neurons is carried by – **Axon**
- Nerve transmission is– **Chemical process**
- Cells secrete a myelin sheath– **Schwann cells**
- The myelinated neurons found– **In Spinal cord and cranial nerves**
- The junction between pre-synaptic and post-synaptic-neuron– **Synapse**
- Nerve impulse through synapse is– **Unidirectional**
- Depolarisation of nerve cell involves– **Influx of Na^+**
- Impulses transmitted from one neuron to another– **Through synapses**
- A polarised neuron is the one that is– **At resting potential**
- In axon of a neuron, the impulse is generated by exchange of– **Sodium and potassium**
- Myelin sheath occurs in– **Medullated nerve fibre**
- During resting membrane potential, the axonal membrane is more permeable to– **K^+**
- Nissl's granules occur in which part– **Neurons**
- In a nerve if sodium pump is blocked, the most likely to happen– **Na^+ inside the nerve will increase**

18.2 Central Neural System

- Opaque white appearance of white matter is due to– **Fibers of tract covered by myelin sheath**
- ____ parts of brain associated with regulation of Circadian rhythms and human behaviour– **Hypothalamus**
- The thermoregulatory centre in the body of human females is found in– **Hypothalamus**
- Brain stem consist of– **Midbrain, medulla oblongata, Pons**
- The cerebral aqueduct lies between the – **third and the fourth ventricles**
- The transmission of impulse through neurons is a– **Electro-chemical phenomenon**
- The resting potential occurs because– **Of the different concentrations of ions across the cell**
- The outer layer of cerebrum, called - **Grey matter**
- Two cerebral hemispheres connected by– **Corpus callosum**
- The number of spinal nerves in man is– **62**
- The association areas are present in the– **Cerebral cortex**
- The limbic system is formed by– **Hypothalamus, amygdala and hippocampus**
- The part of human brain located between thalamus/hypothalamus and pons is– **Midbrain**
- Multipolar neurons are found in the– **Cerebral cortex**
- The ionic gradients across the resting membrane are maintained by– **Sodium-Potassium (Na^+-K^+) pumps**
- Cytoplasm with typical cell organelles and Nissl's granule is present in the– **Cell body**
- ..... the receptors are specifically responsible for maintenance of balance of body and posture. **Crista ampullaris and macula**
- Nissl's bodies are mainly composed of– **Free ribosomes and RER**
- Myelin sheath is produced by– **Schwann cells and oligodendrocytes**
- Receptor sites for neurotransmitters are present on– **Post-synaptic membrane**
- The primary neurotransmitter at the neuromuscular junctions is– **Acetylcholine**
- ..... part of the human brain controls the urge for eating and drinking. **Forebrain**
- The cerebral cortex is referred to as– **Grey matter**
- Amygdala and hippocampus are the parts of– **Limbic system**
- Cerebral aqueduct passes through– **Midbrain**
- Corpora quadrigemina is the part of our– **Brain**
- 'Pons' connects the– **Spinal cord with brain**
- Salivation in mammals is under the control of– **Medulla oblongata**
- Parts of brain which constitute the brain stem– **Midbrain and hindbrain**

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- The layer of cells which covers the cerebral hemisphere is called– **Cerebral cortex**
- The grey colour of the cerebral cortex is due to concentration of– **Neuron cell bodies**
- The association areas are responsible for– **Intersensory association, Communication, Memory**
- The major part of the human brain is– **Cerebrum, cerebellum and brainstem**
- Function of hypothalamus is/are– **Helpful in sleep, Has centres for thirst and hunger, Controls body temperature**
- Outermost covering of brain is– **Dura meter**
- White matter is composed of– **Nerve fibres**
- The command and control system of the body– **Brain**
- Coverings of the brain known as– **Meninges**
- The middle layer of brain called– **Arachnoid**
- The correct sequence of meninges from inner to outer side is– **Pia mater, arachnoid membrane, dura mater**
- Midbrain contain– **Corpora quadrigemina**
- Brain stem includes– **Medulla oblongata, pons varoli, and mid brain**
- Main function of cerebellum is– **Balancing**
- ..... is in contact with the brain tissue. **Pia mater**
- Meninges form outer envelope in– **Brain**
- The hind brain consists of– **Medulla oblongata + cerebellum + pons**
- Part of mammalian brain controlling muscular coordination is– **Cerebellum**
- In mammals, the corpus callosum connects– **The two cerebral hemispheres**
- Structures connect the cerebral hemispheres– **Corpus callosum**
- Part of the neuron is present in a high concentration in the grey matter– **Cell body**
- The functions is not controlled by the medulla oblongata– **Circadian rhythm**
- ..... of the brain is a major coordinating centre for sensory and motor signaling. **Thalamus**
- Thermoregulatory centre in the body of homeothermal animals and man is found in– **Hypothalamus**
- The forebrain consists of– **Cerebrum, thalamus and hypothalamus**
- In homoiotherms, the brain centre for regulating body temperature lies in– **Hypothalamus**
- Midbrain contains– **Cerebral aqueduct**
- The inner parts of cerebral hemispheres and a group of associated deep structures like amygdala, hippocampus, etc., form a complex structure called– **Limbic lobe**
- The dorsal portion of the midbrain consists mainly of four round swellings (lobes) called– **Corpora quadrigemina**
- Cerebellum– **Maintains equilibrium & posture**
- The medulla of the brain is connected to the– **Spinal cord**
- A mammalian brain is characterised by the presence of– **Corpus callosum**
- The nerves carrying impulse to CNS are known as– **Afferent**
- A biopolar neuron has– **1 dendrite and 1 axon**
- Action potential of nerve cell is– **+30 mV**

18.3 Reflex Action and Reflex Arc

- ..... of eyeball dense connective tissue is present in. **Sclerotic layer**
- In the yellow spot of fovea centralis, the cells present are– **Only cones**
- Vitamin A is necessary for the proper physiological function of eye– **Because Vitamin A required for the formation of rhodopsin**
- The perception of sound by a mammal involves the stimulation of the mechanoreceptors located in the internal ear– **In the organ of Corti**
- Twilight vision is also called– **Scotopic vision**
- Twilight vision is the function of– **Rod cells**
- Photosensitive compound in human eye is made up of– **Opsin and Retinal**
- Layer of the wall of eyeball which looks bluish in colour– **Choroid**
- Eye lens is held in the place by– **Ligaments attached to the ciliary body**
- A reflex arc does not involve– **The brain**
- Reflex arc is formed by– **Receptor – spinal cord – muscles**
- Stimulation for reflex action is not– **Happiness**
- In the knee jerk reflex, effector and receptor are– **Motor endplate & muscle spindle respectively**
- Reflex action is– **Involuntary action in response to a peripheral nervous**
- Route of reflex arc is– **Receptors, sensory fibres, grey matter, motor fibres & effectors**
- .....forms a reflex arc– **Stimulus and response**
- In a reflex action, the efferent neurons receive a signal from the– **CNS**

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18.4 Sensory Reception and Processing

- The sense of equilibrium by ear is the function of– **Sensory crista of the ampulla**
- ..... nerve innervates organ of Corti in cochlea. **Auditory**
- The cochlea of ear contains– **Perilymph and endolymph**
- The lower membrane of the scala vestibuli is the– **Reissner's membrane**
- The scala vestibuli ends at the oval window, while the scala tympani terminates at the– **Round window**
- The visual acuity is the greatest at– **Fovea centralis**
- Nerve impulse for hearing originates in– **Auditory nerve**
- Centre for sense of smell is– **Olfactory lobes**
- Macula lutea is a part of– **Retina**
- Structures are the eyes located– **Orbits**
- The pigment that helps eye to see in dim light is– **Rhodopsin**
- Which helps in equalising the pressure on either sides of the ear drum– **Eustachian tube**
- Bony labyrinth of ear contains a fluid known as– **Perilymph**
- In human ear, ... bone is attached with the tympanic membrane. **Malleus**
- How many layers does the wall of the eyeball have– **3**
- Sclera composed of– **Dense connective tissue**
- Sclera is the outermost layer of– **Eye**
- The site from where the nerve impulse for hearing originates in mammals is– **Auditory nerve**
- Organ of Corti occurs in– **Internal ear**
- Fovea centralis in the eye is the area of most acute vision. This is because it has– **High density of cones**
- The anterior portion of the sclera known as– **Cornea**
- Function of the pinna– **Collects sound waves from the air**
- Depression in retina ..... has cones only **Fovea centralis**
- A central opening of iris is– **Pupil**
- Structures contain wax-secreting glands– **Auditory meatus**
- X leave the eye and the retinal blood vessels enter it at a point medial to and slightly above the posterior pole of the eye ball. X is– **Optic nerve**
- A region where photoreceptor cells are not present– **Blind spot**
- The photopic and colour vision are the functions of– **Cones**
- Loudness of sound is transferred to– **Increased movement of basilar fibres of cochlea**

18.5 Miscellaneous

- Vibrations of fenestra ovalis are first transmitted to– **Perilymph of scala vestibuli**
- The stereocilia of hair cells of organ of Corti are covered with a thick elastic membrane called– **Reissner's membrane**
- Macula of labyrinth is bathed in– **Endolymph**
- ___ part of the brain is like a defense castle controlling moods and plays an important role in emotional behaviour, such as aggression and remembering fear– **Amygdala**
- The components of the vestibular apparatus are– **Three semicircular canals and the otolith organs**
- Pseudounipolar neurons occur in– **Cells of dorsal root ganglion**
- The eustachian tube connects ..... with the pharynx. **Middle ear cavity**
- The function of ear ossicles is to increase the efficiency of transmission of sound waves to the– **Inner ear**
- Wax gland present in the ear canal is called– **Sebaceous gland/ceruminous gland**
- Chemicals which are released at the synaptic junction are called– **Neurotransmitters**
- Potential difference across resting membrane is negatively charged. This is due to differential distribution of the ions– **Na^+ and K^+ ions**
- The function of our visceral organs is controlled by– **Sympathetic and parasympathetic neural system**
- An area in the brain, associated with strong emotions is– **Limbic system**
- ..... vitamin present in rhodopsin. **Vitamin-A**
- Human eyeball consists of three layers and it encloses– **Lens, aqueous humor & vitreous humor**
- Wax secreting gland present in the ear canal is called– **Ceruminous gland**
- The part of internal ear responsible for hearing is– **Cochlea**
- The organ of corti is a structure present in– **Cochlea**
- .....part of the brain is responsible for thermoregulation. **Hypothalamus**
- Nissl bodies are mainly composed– **Free ribosomes and RER**
- The transparent lens in the human eye is held in its place by– **Ligaments attached to the ciliary body**

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EXAM POINT

Neural system	
If a person gets ataxia with an accident, the damaged part of the brain is– **Cerebellum**	**AP EAPCET-23.05.2023, Shift-II**
The enzyme present in sweat, saliva and tears is– **Lysozyme**	**AP EAPCET-23.05.2023, Shift-II**
The cells that of nervous system are involved in the formation of blood brain barrier– **Astrocytes**	**TS EAMCET-11.05.2023, Shift-I**
Brainstem of human brain consists of– **Mid-brain, Pons and Medulla oblongata**	**RE-NEET (UG)-06.06.2023 (Manipur)**
The parts of human brain that helps in regulation of sexual behaviour, expression of excitement, pleasure, rage, fear etc. are– **Limbic system and hypothalamus**	**NEET (UG) 07.05.2023**
Intercellular communication in multicellular organism occurs through– **Both nervous and endocrine system**	**UP CPMT-2004**
First genetically modified plant commercially released in India is– **Bt cotton**	**WB JEE-2010**
Lipofuscin granules are found in– **Nerve cell**	**HP CET-2011 / VMMC-2005 / AMU-2004**
Nissl's granules could be seen in– **Neurons**	**Haryana PMT-2011**
Cerebral hemispheres of rat are connected by– **Corpus callosum**	**AMU-2007**
You are watching a horror movie and you notice your heart is beating fast and mouth is dry. It is because of– **Fight and flight response, Sympathetic nervous system**	**CMC Vellore-2008**
Vertebrate brain differentiates from– **Ectoderm**	**J&K CET-2011**
The part of that a neuron is covered by fatty sheath– **Axon**	**Manipal-2008**
Neural system of Human	
The produce of cellular wear and tear that accumulate in the cyton of a neuron are termed– **Lipofuscin granules**	**TS EAMCET 10.05.2023 Shift-I**
Terminal ends of post gangalionic fibres of parasympathetic neural system of effector organ produce– **Acetyl choline**	**TS EAMCET-11.05.2023, Shift-II**
Facial nerve is– **Sensory, Motor**	**VMMC-2011**
The foramen that is a paired in mammalian brain– **Foramen of Luschka**	**VMMC-2011**
The number of spinal nerves in human is– **31 pairs**	**WB JEE-2012**
Third and fourth ventricles of the brain are connected by– **Cerebal aqueduct**	**WB JEE-2012**
Vagus nerve is a– **Mixed X cranial nerve**	**WB JEE-2012**
Comprehension of spoken and written words take place in the region of– **Wernickes area**	**WB JEE-2010**
The cranial nerves that is carrying the nerve fibres originating from the Edinger-Westphal nucleus– **Oculomotor**	**WB JEE-2010**
Total number of Laminae are present in the grey matter of spinal cord– **Ten**	**WB JEE-2010**
Sympathetic nervous system is also known as– **"Fight or flight" system**	**UP CPMT-2010**
The longest cells that in the body of man– **Nerve cells**	**MGIMS Wardha-2007**
The innermost meninges surrounding the central nervous system in frog and man are– **Piamater**	**JIPMER-1998**
Corpora quadrigemina is a part of– **Mid brain**	**Karnataka CET-2002**
The ventricles of the brain and the spinal canal of man contain a fluid termed the– **Cerebro-spinal fluid**	**JIPMER-1999**
EEG is done to detect– **Brain disorders**	**HP CET-2013, VMMC-2003**
The junction between the axon of one neuron and the dendrite of the next is called– **A synapse**	**JIPMER-2011 / Punjab MET-2010 / BCECE-2004, UP CPMT-2001 / JIPMER-1995**

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The 3rd, 6th and 11th cranial nerves are–	**Oculomotor, abducens and spinal accessory**	**UP CPMT-2001**
The purely motor cranial nerve is–	**Spinal accessory**	**Manipal-2000**
Main function of cerebellum is–	**Balancing**	**CG PMT-2006 / Uttarakhand-2005**
Schwann cell is found around–	**Axon**	**BVP-2011 / CG PMT-2011, Haryana PMT-2005 / JIPMER-2005**
Nervous tissues are derived from–	**Ectoderm**	**AP EAMCET-25.09.2020 Shift-II**
The examples of the action of the autonomous nervous system is–	**Peristalsis of the intestine**	**JIPMER-2007 / CG PMT-2006 / AIPMT-2005**
Spinal cord is a cylindrical tube with a narrow cavity, lined by ependymal cells. This cavity is called–	**Central canal**	**MHT CET-07.10.2020 Shift-I**
Risk taking behavior in adolescents is thought to be caused by _____ part of brain developing faster than other parts during this growth period.	**Amygdala**	**MHT CET-07.10.2020 Shift-I**
Lateral ventricles of cerebral hemispheres communicate with third ventricle through–	**Foramen of Monro**	**MHT CET-07.10.2020 Shift-I**
The bundle of nerve fibres is covered by .....A..... and several bundles are covered by .....B.....	**A – perineurium, B – epineurium**	**MHT CET-06.10.2020 Shift-I**
A person has lost his memory in an accident. The part of brain most likely to be injured is–	**Cerebrum.**	**MHT CET-06.10.2020 Shift-I**
The nervous system is called cranial-sacral out flow–	**PSNS and it is cholinergic**	**BVP-2015**
Sympathetic nervous system induces–	**Heart beat**	**Rajasthan PMT-2006,2003 / JIPMER-2011**
Grey matter in central nervous system is formed of–	**Cell bodies of neuron, Non-medullated nerve fibre**	**CMC Ludhiana -2013**
Activity of brain is recorded by–	**EEG**	**BCECE-2004**
Total number of pairs of cranial nerves in human is–	**12**	**HP CET-2013 /BCECE-2009/VMMC-2003/BVP-2002, Haryana PMT-2001 / Karnataka CET-2000**
Brain depends on blood for the supply of–	**Oxygen and glucose**	**BCECE-2003**
The human hindbrain comprises three parts, which is–	**Cerebellum, pons and medulla oblongata.**	**AIPMT (Screening)-2012**
Neuroglial cells associated with–	**Brain**	**AIPMT-1999**
Autonomic nervous system affects–	**Internal organs**	**AP EAMCET-2011, JIPMER-2008**
Dilation of pupil takes place by–	**Sympathetic nervous system**	**UP CPMT-2006**
Number of spinal nerves in rabbit is–	**37 pairs**	**UP CPMT-2011 / Rajasthan PMT-2000**
The part of mid brain of rabbit is–	**Corpora quadrigemina**	**HP CET-2012 / JIPMER-2004, VMMC-2004 / Punjab MET-2003**
The amount of CSF in the cranial cavity–	**140 ml**	**WB JEE-2011**
Human cranium has_____ bones–	**8**	**J&K CET-2004**
The largest muscle in the human body is–	**Gluteus**	**Uttarakhand PMT-2011**
Sympathetic nerves in mammal arise from–	**Thoraco-lumber region**	**BVP-2014, 2000**
Preganglionic sympathetic fibres are–	**Cholinergic**	**AIIMS-1995**
Nissl's bodies are mainly composed of –	**Free ribosome and RER**	**NEET-2018 / BVP-2014 / HP CET-2013, VMMC-2003 / Haryana PMT-2001, AIPMT-2003 / AIPMT-1997**

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Myelin sheath is produced by–	**Schwann cells and Oligodendrocytes**	**NEET-2017**
Reflex action involves–	**Spinal cord**	**JIPMER-2005**
The function of parasympathetic nervous system is–	**Constriction of pupil**	**AIPMT-1990**
Postganglionic nerve fibres of sympathetic system are–	**Adrenergic**	**DUMET-2006**
Cranial nerve which is responsible for bringing information from internal ear is called–	**VIII**	**MP PMT-2013**
The glial cells that help in providing blood-brain barrier are–	**Astrocytes**	**AP EAMCET-2015**
In our body, the largest number of neuron cells can be found in–	**Brain**	**AP EAMCET-24.09.2020 Shift-I**
The function and unit of nervous system is–	**Neuron**	**AP EAMCET-25.09.2020 Shift-I, Punjab MET-2004 / CG PMT-2004**

Neuron play both structural and functional unit of Neural system

Hair cells of organ of Corti acts as–	**Auditory receptors**	**TS EAMCET-10.05.2023, Shift-II**
Bipolar neurons occurs in–	**Retina of eye**	**VMMC-2011, 2009**
Nissl's granules are absent in–	**Axon**	**UP CPMT-2001**
During the conduction of nerve impulse, the action potential is the result of movement of –	**Na^+ from extracellular fluid to intracellular fluid**	**BVP-2012**
Myelinated nerve fibres are white coloured because of–	**Myelin**	**CMC Ludhiana-2012**
The part of that the brain is responsible for the recall of memory–	**Hippocampus**	**AP EAMCET-12.07.2022 Shift-II**
Myelin sheath is a layer covering–	**Nerve fibre in a vertebrate**	**Uttarakhand PMT-2011**
Main fuel for brain–	**Glucose**	**Uttarakhand PMT-2011**
Axons serve to–	**Take away impulse from cytons**	**Uttarakhand PMT-2011**
Number of brain cells dead at the age of 70 years constitutes–	**20%**	**UP CPMT-2013**
In a myelinated neuron, two adjacent myelin sheaths are separated by gaps called–	**Nodes of Ranvier**	**Kerala PMT-2008**
The cell that transfers information about pain to the brain is called a–	**Neuron**	**KVPY (SA)-2011**
The part of nephron involved in active reabsorption of sodium is	**Proximal convoluted tubule**	**NEET-2016 Phase-II**
The part of that the brain is responsible for thermoregulation–	**Hypothalamus**	**NEET-2019 / CMC Vellore-2009, UP PMT-2009 / RajasthanPMT-2009**
In sympathetic nerve terminals neurotransmitters are–	**Adrenalin and non-adrenalin**	**MP PMT-2013**
The products of that cell wear and tear get accumulated in lysosomes with age in the cell body of neuron–	**Lipofuscin granules**	**AP EAPCET-12.07.2022 Shift-I**

Generation, Conduction and Transmission of Impulse

The primary neurotransmitter at the neuromuscular junction is–	**Acetylcholine**	**AMU-2015 / J&K CET-2009 / AMU-1997**
Neurotransmitter, at a synapse, is stored temporarily in–	**Synaptic vesicles**	**MHT CET 5.10.2020 Shift-I**
During the propagation of a nerve impulse, the action potential results from the movement of–	**Na^+ ions from extracellular fluid to intracellular fluid**	**BHU PMT (Screening)-2010**
Nerve gas affect neuromuscular activity by–	**Inhibiting acetylcholinesterase**	**AMU-1998**
Na^+, K^+ pump is found in membranes of many cells, like nerve cells. It work against electrochemical gradient and involve an integral protein ATP. For each molecule of ATP used–	**3 ions of Na^+ pumped out and $2K^+$ are taken in**	**Manipal-2015,2011 / AFMC-2006 / AMU-1999**
Saltatory conduction occurs in–	**Myelinated nerve fibres**	**AMU-2006**
The one way or unidirectional transmission of nerve impulse in nerve cells is due to the presence of–	**Synapses**	**J&K CET-2007**

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Release of a neurotransmitter at a synaptic junction is brought about by– **Calcium**	**AMU-2001**
The resting membrane potential of nerve fiber is– **– 70mV**	**AP EAMCET-2013**
During the conduction of nerve impulse, the repolarization occurs with the– **Efflux of K^+ ions**	**UP CPMT-2011**
In the axon of motor nerve fiber, the nerve impulse travels– **Away from cell body**	**UP CPMT-2011**
Depolarization of axolemma during nerve conduction takes place because of– **Na^+ move inside and K^+ move more out side**	**AIPMT-2000**
Effect of anaesthetics on body– **Inhibits Na^+–K^+ pump**	**AIPMT-1998**
The contractile regulatory proteins that mask and unmask active sites in the sarcomere are– **Troponin and Tropomyosin**	**TS EAMCET-2015**
Specialized cells that are sensitive to vibration, pain and tension are called– **Proprioceptors**	**MHT CET-04.10.2020 Shift-I**
Resting membrane potential is maintained by– **Ion pumps**	**Assam CEE-2014**
In the resting state of the neural membrane, diffusion due to concentration gradients, if allowed, would drive – **Na^+ into the cell**	**AIPMT-2004**
Control and co-ordination of head movements in response to visual and auditory stimuli is carried out by– **Corpora quadrigemina**	**MHT CET-01.10.2020 Shift-I**
When stimulus is applied to a membrane of neuron, it causes rapid influx of– **Na^+**	**MHT CET-01.10.2020 Shift-I, KVPY (SA)-2018, SRM JEEE -2017**
Neurogenic heart receives stimulus for contraction from ..... fibres. **Nerve**	**MHT CET-01.10.2020 Shift-I**
The velocity of conduction of nerve impulse in frog is– **30m/s**	**JIPMER-2010**
The important for muscle contraction and nerve impulse transmission is – **Ca^{2+} and Mg^{2+} ions**	**JIPMER-2010, CG PMT-2008**
Transmission of signals or impulse through a nerve is– **Chemical phenomenon**	**AMU-1995**
Name the ion responsible for unmasking of active sites for myosin for cross-bridge activity during muscle contraction. **Calcium**	**NEET-2016 Phase-II**
Destruction of the anterior horn cells of the spinal cord would result in loss of– **Voluntary motor impulses**	**AIPMT (Re-Exam)-2015**
Parasympathetic neural signals affect the working of the heart in a way that – **Reduce both heart rate and cardiac output**	**AIPMT-2014**
Larger influx of sodium ions into the nerve cell is called– **Depolarization**	**AP EAPCET-11.07.2022 Shift-I**
Acetylcholinesterase help in breaking– **Acetylcholine**	**UP CPMT-2007**
Action potential is generated by– **Na^+**	**JIPMER-2008**
The release of chemical messenger from synaptic vesicles is under the influence of these ion (s).– **Ca^{++}**	**AIIMS-2012**
Neurotransmitter released by– **Synaptic vesicles**	**AIIMS-26.05.2019 Shift-II**
Node of Ranvier occurs where– **Myelin sheath is discontinuous**	**AIIMS-2015**
Unidirectional transmission of a nerve impulse through nerve fibre is due to the fact that– **Neurotransmitters are released by the axon endings and not by dendrites**	**AIIMS-2004**
Afferent nerve fibres carry impulses from– **Receptors to CNS**	**AIPMT-1992**
Dopamine is a type of– **Neurotransmitter**	**AP EAMCET-25.09.2020 Shift-I, AMU-1995**
The electrical potential difference between outside and inside of a nerve axon before excitation is known as– **Resting potential**	**Kerala PMT-2011**
Node of Ranvier is found in– **Axon**	**DUMET-2003**
The path of passage of stimulus when you accidentally touch a hotplate is– **Receptor → spinal cord → muscles**	**KVPY SB & SX-2016**
The ion pairs that is involved in nerve impulses– **Na^+,K^+**	**KVPY SB & SX-2016**

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The characterizes that the depolarization state of neuron– **Na^+ gets inside through channels**	**MHT CET-2014, UP CPMT-2012**
Brain receives and sends signals in the form of– **Electrical impulses**	**Haryana PMT-2001**
The acts solely as an inhibitory neurotransmitter– **Gamma (γ) amino butyric acid (GABA)**	**WB JEE-2015**
Central neural system and its function	
Limbic system is involved in the regulation of– **Behavioural and emotional respronses**	**TS EAMCET-11.05.2023, Shift-II**
The pneumotaxic centre and rhythm centre are respectively present in– **Pons and medulla oblongata**	**AMU-2015**
Reason, will, memory, intelligence and emotions are governed by– **Cerebral hemispheres**	**BVP-2010, CMC Vellore-2012**
The IV, V and IX cranial nerves are– **Pathetic (trochlear), trigeminal and glossopharyngeal**	**BVP-2010**
The foramen that is present in brain– **Foramen magnum**	**UP CPMT-2010**
Smallest cranial nerve is– **Trochlear**	**UP CPMT-2010**
The third ventricle of the brain is situated in the– **Roof of diencephalon**	**VMMC-2013**
The structure that is related with vision in rabbits– **Corpora quadrigemina**	**Manipal-2012**
Hearing is controlled by– **Temporal lobe of cerebrum**	**Manipal-2011**
The affected by injury to Broca's area of cerebrum is– **Speech disorder**	**MHT CET 5.10.2020 Shift-I**
If a person experiences difficulty in movements of pharynx, neck and shoulders, ...cranial nerve may be injured. **Spinal accessory**	**MHT CET 5.10.2020 Shift-I**
The patient of this disease exhibit memory loss (particularly for recent events), shortened attention span, disorientation and eventual language loss– **Alzheimer's disease**	**AFMC -2009**
Respiration is controlled by– **Medulla oblongata**	**VMMC-2013 / AFMC -2011, AMU- 2010 / AMU -2000**
Salivation in man is under the control of– **Medulla oblongata**	**UP CPMT-2012 / AMU-2004**
Corpus callosum connects the– **Two cerebral hemispheres**	**Karnataka CET-2022 / MHT CET-2016, WB JEE-2008 / Manipal-2014, 2005**
The body temperature regulatory centre in the brain is– **Hypothalamus**	**Kerala PMT-2015 / AIPMT (Screening)-2010, AIPMT-2009 / AFMC-2003**
Excessive stimulation of vagus nerve in humans may lead to– **Peptic ulcers**	**Rajasthan PMT-2010**
Neural canal is present in– **Vertebral column**	**MGIMS Wardha-2005**
The aqueduct of Sylvius connects– **3^{rd} and 4^{th} ventricles**	**TS EAMCET-09.08.2021 Shift-II, AMU -2000**
Axis vertebra is identified by– **Odontoid process**	**Uttarakhand PMT-2009**
Papillary muscles are found in mammalian– **Ventricles**	**Uttarakhand PMT-2009**
The foramen that is paired in mammalian brain– **Foramen of Luschka**	**BVP-2009 Uttarakhand PMT-2009**
The cells that from the lining of brain– **Ependymal cells**	**CG PMT-2007**
Cerebrospinal fluid is produced by– **Choroid plexuses**	**CG PMT-2007**
The ventricles of the brain are filled with– **Cerebrospinal fluid**	**CG PMT-2007**
The cranial nerve that is carrying the nerve fibres originating from Edinger-westphal nucleus– **Oculomotor**	**Manipal-2015**
The cavity in the region of diencephalon in the brain of rabbit is called– **Third ventricle**	**Haryana PMT-2004, Manipal-2003**
Outermost covering of brain is called as– **Dura mater**	**J&K CET-2006, JIPMER-2000**

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Depression in skull which lodges the pituitary gland is known as – **Sella turcica**	**Manipal-2013**
Alzheimer's disease affects– **Old (elderly)**	**Manipal-2013**
Cranial nerve showing maximum branching is– **Vagus**	**MGIMS Wardha-2009 / AMU-2008, 1998, VMMC-2008**
The bacterium that involved in denitrification– **Pseudomonas**	**J&K CET-2015**
Power of regeneration is minimum in– **Brain cell**	**Haryana PMT-1999**
Memory weakens if ---------- is injured. **Cerebrum**	**Haryana PMT-1999**
Hypothalamus forms the floor and lower part of– **3rd ventricle**	**Haryana PMT-1999**
Main function of cerebellum is– **Co-ordination of voluntary actions**	**Rajasthan PMT-2001, Haryana PMT-1999**
In a man, abducens nerve is injured. The function that will be affected– **Movement of the eye ball**	**JIPMER / CG PMT-2006**
Lateral ventricles are found in– **Cerebral hemisphere**	**CG PMT-2006, 2004**
Skeletal muscles are controlled by– **Somatic nerves**	**DUMET-2009**
Vomiting centre is located in the– **Medulla oblongata**	**DUMET-2009, 2011**
The function of vagus nerve innervating the heart is to– **Reduce the heart beat**	**DUMET-2009**
Taste area lies in the– **Parietal lobe**	**Haryana PMT-2003**
Corpus luteum is a part of– **Mammalian ovary**	**Haryana PMT-2003**
Olfactory lobes of man are– **Solid**	**Haryana PMT-2003**
Drinking of alcohol affects– **Cerebellum**	**BCECE-2004 / Haryana PMT-2003**
Foramen of Monro is an aperture between– **Lateral and third ventricle**	**VMMC-2008**
Corpus striatum is found in– **Cerebral hemishere**	**CG PMT-2010**
Purely motor cranial nerves are – **Cranial nerves III, IV, VI, XI and XII**	**HP CET-2012 / AP EAMCET-2011, Uttarakhand PMT-2008 / CMC Vellore-2008, VMMC-2007 / AMU-2006 / UP CPMT-2002, DUMET-2001 / UP CPMT-2001**
The vagus nerve is the cranial nerve numbering– **10th**	**HP CET-2013 / VMMC-2003, Manipal-2001/ Haryana PMT-2001, BVP-2001 / AIPMT-1997 / AIPMT-1992,**
Venom of cobra attacks on– **Nervous system**	**AFMC-2001**
Fifth cranial nerve of frog is– **Trigeminal**	**AFMC-2010**
The primary visual centre/cortex is located in – **Occipital lobe**	**AP EAMCET-03.09.2021 Shift-II**
The person is suffering from which disease having the symptoms like aging and tremor– **Parkinson's**	**GUJCET-2017**
Anterior choroid plexus is present on the– **Roof of diencephalon**	**Karnataka CET-2008**
In the central nervous system, myelinated fibres form the ..... while the non-myelinated fibre cells form the– **White matter, grey matter**	**JIPMER-2014**
The desynchronized waves recorded EEG in persons …….. tense are– **Beta waves**	**AP EAMCET-25.04.2018 Shift-II**
The only cranial nerve that extends into the abdominal cavity is– **Vagus**	**TS EAMCET-30.07.2022 Shift-II, TS EAMCET-30.07.2022 Shift-II**
In a car accident, a person lost the speech and is unable to swallow the food. The reason is– **Hypoglossal motor nerve was damaged**	**TS EAMCET-02.05.2018 Shift-II, TS EAMCET-02.05.2018 Shift-II**

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Alzheimer's disease in humans is associated with the deficiency of – **Acetylcholine**	**AIPMT-2009**
Parkinsonism is related with– **Brain**	**JIPMER-2015**
The cranial nerve that goes to the external rectus muscle is – **VI**	**AP EAMCET-2006**
Choroid plexus is a network of– **Capillaries**	**Karnataka CET-2004**
The primary visual area is located in – **Occipital lobe**	**Karnataka CET-2004**
Dreaming occurs in– **REM sleep**	**Punjab MET-2008 / AMU-2009**
Scientists pin pointed the location of colour processing centres in human visual cortex by mean of– **PET scanning**	**AMU-2008**
The agents, which are known to cause CJD are– **Protein particles**	**Manipal-2009**
Hypophyseal portal system is found in– **Brain**	**AP EAMCET-25.09.2020 Shift-I / AMU-1996**
Parkinsonism, which is characterized tremors and progressive rigidity of limbs is caused by degeneration of brain, neurons and neuro transmitters called– **Dopamine**	**AMU-2003**
The psychological disorder, which is characterized by sadness, hopelessness, low self-esteem, decline in interest, energy, concentration and changes in sleep pattern and appetite is called– **Mood disorder**	**CMC Ludhiana-2015**
The medullary respiratory centre is directly affected– **Chemically**	**Manipal-2011**
Injury to medulla oblongata causes sudden death mainly as– **Vital activities such as heart beat and respiration stop**	**MHT CET-08.10.2020 Shift-I**
Activities like running, talking and typing are controlled by– **Cerebellum**	**GUJCET-2016**
Neurasthenia refers to– **Mental inability to concentrate**	**Kerala PMT-2008**
The branch, which is associated with diagnosis, prevention and cure of mental disorders is called– **Psychiatry**	**AIIMS-1997**
The delicious food generally makes mouth watery. It is due to– **Neural response**	**J&K CET-2002**
The area in the brain which is associated with strong emotions is– **Limbic system**	**Assam CEE-2014**
The cranial nerve of man that is both sensory and motor– **Trigeminal**	**AIIMS-1994**
Pons, cerebellum and medulla together consititue– **Hind brain**	**Kerala PMT-2009**
Integration of the visual, tactile and auditory inputs occurs in the– **Midbrain**	**Kerala PMT-2012**
In EEG the waves which are quite low in frequency and having high amplitude are– **Delta waves**	**AP EAMCET-2014**
The region of human brain which has pneumotaxic centre that alters respiratory rate by reducing the duration of inspiration– **Pons**	**NEET (Re-Exam)-04.09.2022**
In human brain the sensation of touch, pain and temperature is controlled by the– **Parietal lobe of cerebrum**	**KVPY (SA)-2013**
All sensory information be registered consciously by the forebrain must pass via the– **Thalamus**	**AMU-1995**
The respiratory and cardiac centres are located in– **Medulla oblongata**	**AMU-1995**
Pneumotaxic centre is present in– **Pons varolii**	**UP CPMT-2007**
Hearing impairment affects, part of brain– **Temporal lobe**	**AIIMS-2007**
If dorsal nerve of spinal cord is broken down then its effect is– **No impulse is transmitted from receptor**	**JIPMER-2006**
The cavity of diencephalon is known as– **III ventricle**	**JIPMER-2008**
Sesamoid bone is– **Patella**	**AIIMS-2009**
Third ventricle of brain is also known as– **Diacoel**	**AIPMT-1990**
The cranial nerves that can regulate heart beat– **X**	**AIPMT-1989**
The sympathetic nerves in mammals arise from– **Thoraco-lumbar nerves**	**AIPMT-1995**
Hypoglossal nerve controls the movements of– **Tongue**	**J&K CET-2000**
The damaged cells that cannot be repaired– **Brain cells**	**JCECE-2007**
Parkinson's disease is associated with– **Midbrain**	**JCECE-2002**

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A person met with an accident and was diagnosed with memory loss. Part of brain injured in the accident– **Hippocampus**	**BCECE-2015**
The cranial nerves which innervate eye muscles are– **Occulomotor, Pathetic, Abducens**	**MHT CET-2019**
Inferior colliculi of human brain respond to the.....stimuli. **Auditory**	**MHT CET-2019**
Branching tree like processes of white matter extending into grey cortex of cerebellum is called– **Arbor vitae**	**MHT CET-2018 / JIPMER-2010**
Organ of Corti is located on the– **Basilar membrane**	**MHT CET-2017**
If cranial nerves : 12 pairs, then spinal nerves– 31 pairs	**MHT CET-2017**
The parietal and temporal lobes are separated by– **Lateral sulcus**	**MHT CET-2016**
The parotid salivary glands are innervated by branches of .....nerve. **Glossopharyngeal**	**MHT CET-2016**
Mixed nerves are– **V, VII, IX, X**	**MHT CET-2005**
The part of the brain that controls gait, posture, balance and equilibrium– **Cerebellum**	**CG PMT-2005, MHT CET-2006**
The tract of nerve fibres which connects the cerebral hemispheres is– **Corpus callosum**	**Karnataka CET-2001, Kerala PMT-2011**
Pneumotaxic centre which can moderate the functions of the respiratory rhythm centre is present at– **Pons region of brain**	**Kerala PMT-2011**
Third ventricle is present in– **Brain**	**CG PMT-2005**
Movement of tongue muscle is controlled by– **Hypoglossal nerve**	**WB JEE-2011**
The function that will be lost due to damage of occipital lobe– **Vision**	**WB JEE-2011**
The part of the brain where the centre for hunger and thirst is located is– **Hypothalamus**	**WB JEE-2011**
Electric potential of the brain is recorded by– **EEG**	**WB JEE-2011**
Foramen magnum is situated in– **Base of skull**	**WB JEE-2007**
The genu and splenium in brain are associated with– **Cerebrum**	**WB JEE-2007**
Cerebrospinal fluid is present– **Between piamater and arachnoid**	**WB JEE-2007**
The supporting and nutritive cells found in the brain are– **Ependymal cells**	**DUMET-2006**
The third ventricle of the brain is located– **In the center of the brain**	**KVPY SB & SX-2014**
The cells which form blood brain barrier in the central nervous system are– **Astrocytes**	**TS EAMCET-02.05.2018 Shift-I**
The nerves that arise from spinal cord are– **Mixed nerves**	**Rajasthan PMT-1999**
Medulla - oblongata is controls of– **Breathing, Blood pressure**	**Rajasthan PMT-1999**
Arbor vitae is a part of– **Cerebellum**	**Manipal-2014,2005**
H-shaped grey matter is– **Spinal cord**	**Manipal-2005**
Cerebellum of brain is concerned with a– **Contraction of voluntary muscles, Coordinating and regulating tone**	**Manipal-2001**
Learning is related to– **Cerebrum**	**Haryana PMT-2001**
The patterns that of electroencephalography indicate the possibility of presence of brain tumors– **Delta waves**	**TS EAMCET-08.05.2019 Shift-II**
The space between arachnoid and pia mater is– **Sub arachnoid space**	**J&K CET-2003**
Cerebellum portion of brain is– **Concerned with the maintenance of posture/equilibrium**	**J&K CET-2003 / CMC Vellore-2012**
This part of brain is called gyroscope of the body– **Cerebellum**	**TS EAMCET-30.07.2022 Shift-I, TS EAMCET-09.08.2021 Shift-I, TS EAMCET-03.05.2018 Shift-I**
Both cerebral hemisphere are joined by transverse septum which is made up of white matter fibres are called– **Corpus callosum**	**KVPY SA-2014 / Rajasthan PMT-1995**
The total numbers of lobes are present in each cerebral hemisphere– **Four**	**Rajasthan PMT-1995**
The part of brain that control intellectual ability– **Frontal lobe**	**DUMET-2007**
Arbor vitae is composed of– **White matter**	**JCECE-2014**

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The area of cerebral cortex that is responsible for the interpretation of speech– **Wernicke's area**	**WB JEE-2014**
Diencephalon is related to– **Hypothalamus**	**BVP-2011**
Vetebrate brain differentiates from– **Ectoderm**	**JIPMER-2011, CG PMT-2005**
The cranial nerve that has the highest number of branches– **Vagus nerve**	**JIPMER-2011, AFMC-2003**
Broca's area of speech is present in– **Frontal lobe**	**WB JEE-2008**
Part of the brain concerned with the muscular movement is– **Cerebellum**	**CG PMT-2004, WB JEE-2008**
The pairs of cranial nerves that is/are of mixed category– **Trigeminal and facial, Glossopharyngeal and vagus**	**WB JEE-2015**
The bundle of axons in the central nervous system is known as– **Tract**	**WB JEE-2015**

Reflex Action and Arc

Sensory receptor of warmth located principally at the tip of fingers is known as– **Ruffini's corpuscles**	**WB JEE-2006**
A reflex action is a quick involuntary response to stimulus. This is an example of both, unconditioned and conditioned reflex– **Secretion of saliva in response to the aroma of food**	**KVPY SB & SX-2012**
Reflex action involves– **Spinal cord**	**Haryana PMT-2005**
Ivan Pavlov performed experiments on– **Conditioned reflexes**	**AIPMT-1993, MGIMS Wardha-2013**
Simplest reflex action in human is– **Mono synaptic**	**AIPMT-1999**
In somatic reflexes, the effectors are located in– **Skeletal muscles**	**MHT CET-08.10.2020 Shift-I**
One common example of simple reflex is– **Closing of eyes when strong light is flashed across them**	**AIIMS-2008**
The reflex are which is made up of one sensory and one motor neuron is– **Monosynaptic**	**WB JEE-2011, MHT CET-2019**
The pathway of reflex arc as– **Sense organ, sensory neuron, motor neuron, spinal cord, muscle**	**KVPY (SA)-2010, Rajasthan PMT-2001**

Sensory Reception and Processing

The end organs of Ruffini are receptors of– **Heat**	**WB JEE-2006**
Organ of Jacobson helps in– **Smell**	**WB JEE-2010**
Jacobson's organ is found in– **Nose**	**Haryana PMT-2002**
The number of sensations can skin perceive is – **Four**	**Haryana PMT-1999**
The auditory nerve gets its input from – **The sense cells of the cochlea**	**KVPY SA-2014**
Nerve fibres transmit the nerve message by means of– **Electro-chemical**	**AMU-1996**
The nerve transmitter, produced at the synapse and neuromuscular junction, is– **Acetylcholine**	**AFMC-2001**
The purely motor nerve– **Trochlear, abducens**	**CMC Ludhiana-2007**
Stimulation of a muscle fibre by a motor neuron occurs at– **The neuromuscular junction**	**AIPMT-2014**
Receptor sites for neurotransmitters are present on– **Post-synaptic membrane**	**NEET-2017**
The exocrine glands that are present in skin– **Sweat gland, sebaceous gland**	**AIIMS-26.05.2018 Shift-I**
Excessive stimulation of vagus nerve in humans may lead to– **Peptic ulcers**	**AIIMS-2003**
The nerve related with diaphragm is– **Phrenic**	**CG PMT-2005**
Cutaneous glands are– **Sebaceous glands**	**CG PMT-2005**
Cranial nerves numbering IV, V and VI are respectively– **Trochlear, trigeminal, abducens**	**DUMET-2002**
If vagus nerve is injured in human, one is remain unaffected– **Tongue movements**	**Manipal-2014**
The number of cranial nerves in frog and man is– **10 and 12**	**Manipal-2005**
Keratinisation of skin is prevented by– **Retinol**	**BVP-2014**

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It is free living that aerobic non-photosynthetic nitrogen fixing bacterium is– **Azotobacter**	**Haryana PMT-2001**
Meissner corpuscles are responsible for– **Pressure and present in skin**	**Rajasthan PMT-2005**
Eye and Ear	
The vibration form the ear drum are transmitted through ear ossicles to– **Oval window**	**Karnataka CET-20.05.2023**
The area of retina of human eye which contain only cones is– **Fovea centralis**	**TS EAMCET 10.05.2023 Shift-I**
In the myopia eye defect, the rays of light– **Meet at a focus in front of the retina**	**WB JEE-2006**
The muscles surrounding the pupil of rabbit's eye are– **Unstriated and involuntary**	**UP CPMT-2004**
Yellow spot is found in– **Eyes**	**Rajasthan PMT-2004**
Rods and cones of eyes are modified– **Bipolar neuron**	**AFMC-2005**
Internal ear is filled with– **Perilymph, Endolymph**	**AFMC-2005**
Organ of Corti is found in– **Inner ear**	**VMMC-2014 / Rajasthan PMT-2006, 2003, Punjab MET-2003/ BVP-2001**
Malleus, incus, stapes are modifications of respectively– **Articular, quadrate and hyomandibular**	**Rajasthan PMT-1996**
The substance that is generally absent from aquous humor– **Hyaluronic acid**	**Rajasthan PMT-1996**
Middle ear protects the internal ear from high sound waves– **By pulling inside malleus and tympanic membrane**	**Rajasthan PMT-1996**
Pigment iodopsin is contained in– **Cone cells**	**Manipal-2012 / AFMC-2010**
The abnormalities of the eye, that one is a serious condition that leads to blindness– **Glaucoma**	**AIIMS-2007 / AFMC -2011**
Colour perception in man is due to– **Iodopsin pigment in cone cells**	**DUMET-2010**
The cells that are associated with identification of colours in bright light– **Cone cells**	**DUMET-2008**
A person suffering from the deficiency of the visual pigment rhodopsin is advised to take more of– **Carrot and ripe papaya**	**AFMC-2007**
In dark adaptation– **Only rods are involved**	**HP CET-2011 / VMMC-2005, AMU-2004 / BVP-2003**
Part of ear where sound is transduced is– **Cochlea**	**HP CET-2011**
Vitreous humor is– **Mucoid connective tissue**	**HP CET-2011 / BCECE-2006, VMMC-2005 / AMU 2004 / BVP-2003**
Lens getting opaque in – **Cataract**	**JIPMER-1999**
Glaucoma is an eye-disease arising from– **Increased pressure of fluid in eye-ball**	**JIPMER-1997**
Human eye lens is– **Biconvex and cannot be moved forward**	**JIPMER-1997**
The anterior portion of the sclera is called– **Cornea**	**Kerala PMT-2015**
The projecting ridge in ampulla of semi-circular canals in ear is called– **Crista ampullaris**	**Kerala PMT-2015**
Cornea transplant in humans is almost never rejected. This is because– **It has no blood supply**	**BHU PMT (Screening)-2010**
A person is wearing spectacles with concave lenses for correcting vision. While not using the glasses, the image of a distant object in his case will be formed– **in front of the retina**	**Rajasthan PMT-2010 / AIIMS-2003**
The part of the human eye adjusts that the focal length of lens– **Ciliary body**	**Rajasthan PMT-1998**
Too short eye ball and too flat lens produce– **Far sightedness**	**Rajasthan PMT-1998**
The sound reception can be interpreted by– **Cerebral hemisphere**	**Rajasthan PMT-1998**
Eustachian canal connects– **Pharynx with middle ear**	**MGIMS Wardha-2008 / JIPMER-2010**

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The direction of light striking the retina will be– **Sensory nerves → ganglionic cells → bipolar neurons → photosensory cells**	**AMU-2010**
The optic lobes in humans are represented by the corpora– **Quadrigemina**	**AMU-2010**
The vibrations of the tympanic membrane are amplified approximately …… times in the oval window. **20**	**AMU-2010**
Cornea is covered externally by a thin transparent membrane, which is– **Conjunctiva**	**AMU -2000**
Fine blood capillaries seen on reddening of the eyes are spread over– **Conjunctiva**	**AMU -2000**
Human eye is sensitive to wavelength in the range of– **380- 760 nanometer**	**AMU-1999**
Bipolar neurons occur in– **Retina of eye**	**Uttarakhand PMT-2009**
When the intensity of light is low during night the light is detected by– **Rods**	**CG PMT-2007**
The cranial nerve in rabbit that is connected to the superior oblique muscle of the eye is– **IV**	**AP EAMCET-2004**
The brain structure in rabbit that is directly related to vision– **Corpora quadrigemina**	**Haryana PMT-2005 / AFMC-2002**
The part of retina that consists of only cones– **Fovea centralis**	**Haryana PMT-2005**
In the ear of man, the perilymph passes from middle to inner ear through– **Fenestra ovalis**	**JIPMER-2001**
The sensory organ that is involved when you feel an earthquake– **Ears**	**Haryana PMT-1999**
Anaemia is caused by deficiency of vitamin– **B-complex**	**Haryana PMT-1999**
The retina of nocturnal birds contain– **Rods only**	**AMU-2005**
The point in eye of mammals from which optic nerves and blood vessels leaves the eye ball is– **Blind spot**	**AFMC-2004 / AMU-2007 / CMC Ludhiana-2008**
The optic lobes in humans are represented by the corpora– **Quadrigemina**	**AMU-2012**
Dark adaptation in human eye involves– **Conversion of trans-retinene into II cis retinene**	**AMU-2012**
Ear drum is known as– **Tympanic membrane**	**CG PMT-2006**
The auricle (external ear) in man is made up of– **Elastic cartilage**	**MHT CET-07.10.2020 Shift-I**
Malleus bone of ear is attached to– **Tympanic membrane**	**MHT CET-06.10.2020 Shift-I**
Eyes of cats glitter at night due to presence of– **Tapetum lucidum**	**BHU PMT (Screening)-2011**
A slight opacity of cornea is– **Nebula**	**BHU PMT (Screening)-2011**
Eustachian tube is present between– **Middle ear and pharynx**	**VMMC-2010**
In the blind spot where the optic nerves leaves the eyes– **Rods and cones are absent**	**AFMC-2006**
A serious eye defects which can lead to blindness is– **Glaucoma**	**VMMC-2008 / AMU-2008**
UV radiation from sun causes, the disorder of eyes– **Cataract**	**Uttarakhand PMT-2008 / BVP-2007**
The sensory neurons of a vertebrate retina are– **Rods and cones**	**CG PMT-2010**
Resolving power of light microscope is– **0.2 micrometer (μm)**	**CMC Vellore-2014**
The ossicular chain formed by three tiny bones malleus, incus and stapes is found in– **Ear**	**Tripura JEE-2022**
Organ of Corti helps in– **Transduction of auditory signals**	
The perception of sound in a mammal stimulation of mechanoreceptors located in– **Organ of Corti**	**CMC Ludhiana-2007**
Retina is most sensitive at– **Fovea centralis**	**JIPMER-2005 / CMC Ludhiana-2007 /AIPMT-1993**
Suspensory ligaments are found in– **Eye**	**Haryana PMT-2011**
Corpora quadrigemina is related with– **Vision**	**AMU-2002**
Eyes are ..... in origin. **Ectoderm, Mesoderm**	**Manipal-2006**
The parts of the eye that is affected in cataract– **Lens**	**KVPY SA-2019**
The part of the brain that receives impulses from eyes and muscles of head– **Superior colliculi**	**GUJCET-2018**

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Schneiderian and tympanic membranes respectively belongs to– **Nose and ear**	**JIPMER-2016**
Photosensitive compound in human eye is made up of– **Opsin and Retinal**	**NEET-2016 Phase-I**
In blind spot of the human eye– **Both cones and rods are absent**	**HP CET-2018 / Karnataka CET-2019**
Meniere's disease is associated with– **Ear**	**JIPMER-2015**
The part that of the human ear plays no role in hearing as such but is otherwise very much required– **Vestibular apparatus**	**AIPMT (Screening)-2012**
The purplish red pigment rhodopsin contained in the rods type of photo receptor cells of the human eye, is a derivative of– **Vitamin A**	**AIPMT (Screening)-2011**
Characteristics character of human cornea– **Blood circulation is absent in cornea**	**AIPMT-2001**
The types that of images are produced by X-rays– **2D image**	**AP EAMCET-11.07.2022 Shift-II**
Scientists pin pointed the location of colour processing centers in human visual cortex by means of – **PET scanning**	**VMMC-2008**
The forward stereoscopic visual field will be the greatest in– **Cat**	**AMU-2010**
Decline in hearing power begins in man after– **60 years**	**Uttarakhand PMT-2011**
Aqueous and vitreous humour are divided by– **Lens**	**JIPMER-2008**
Cochlear duct known as– **Scala media**	**Uttarakhand PMT-2011**
Fovea in the eye is a central pit in the yellowish pigmented spot called– **Macula lutea**	**Kerala PMT-2008**
A serrated junction between the retina and ciliary body is – **Ora serrata**	**AIIMS-1997**
Otorhinolaryngology is the study of– **ENT (Ear, nose and throat)**	**AIIMS-1999**
Salivation in man is under the control of– **Medulla oblongata**	**BVP-2003**
Part of ear where sound is transduced is– **Cochlea**	**BVP-2003**
If an organism has more rods it will– **Active during night**	**BVP-2004**
Colour blindness results from– **Absence of cones**	**BVP-2002**
Ishihara chart is used to detect– **Colour blindness**	**CMC Vellore-2013**
Sea gulls excrete excess of NaCl from– **Nasal cavity**	**JIPMER-2010**
'Adaptation' of eyes in dark is due to– **Repletion of vision pigment in rods**	**JIPMER-2010**
Human ear ossicles are– **Incus, malleus and stapes**	**JIPMER-2010**
Short sightedness in humans can be corrected by using– **Concave lens**	**KVPY (SA)-2013**
A gymnast is able to balance his body upside down even in the total darkness because of– **Vestibular apparatus**	**AIPMT-2015**
In mammalian eye, the 'fovea' is the center of the visual field, where– **High density of cones occur, but has no rods**	**AIPMT (Re-Exam)-2015**
The receptors that are specifically responsible for maintenance of balance of body and posture **Crista ampullaris and macula**	**NEET (Odisha)-2019**
The transparent lens in the human eye is held in its place by– **Ligaments attached to the ciliary body**	**NEET-2018**
The auditory ossicle that is attached to the tympanic membrane of external ear is– **Malleus**	**SRM JEEE -2017**
The supportive skeletal structures in the human external ears and in the nose tip are examples of– **Cartilage**	**AIPMT (Mains)-2012**
The black pigment in the eye which reduces the internal reflection is located in– **Retina**	**AIIMS-2007**
The part that of retina consists of only cones– **Fovea centralis**	**JIPMER-2005**
The maintains that static equilibrium is – **Utricle and Saccule**	**AIIMS-25.05.2019 Shift-I**
Function of iris is to– **Alter the size of pupil**	**AIPMT-1993**
Sensitive pigmented layer of eye is– **Retina**	**AIPMT-1989**
In the chemistry of vision in mammals, the photosensitive substance is called– **Rhodopsin**	**AIPMT-1997**
The Piezo-electric effect is used in– **Sonography**	**AMU-2011**
NMR imaging technique is based on the gyromagnetic property of– **Proton**	**CMC Ludhiana-2007**

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19.

CHEMICAL COORDINATION AND INTEGRATION

19.1 Endocrine Glands and Hormones

- Hormone dilates blood vessels during high B.P.– **ANF**
- A group for salt & H_2O balancing in body– **ADH and Aldosterone**
- FSH plays an important role in– **Spermatogenesis**
- Glucagon produced by alpha cells of islet of Langerhans which converts– **Glycogen to glucose**
- Suitable hormones related to stimulation of gluconeogenesis, lipolysis and proteolysis– **Gluocorticoids**
- An adenohypophysis hormone ..... is regulated by feedback mechanism. **TSH**
- In hormone action, if receptor molecules are removed from target organ, the target organ will– **Not respond to hormone**
- Oxytocin responsible for vigorous contraction of uterus at the time of child birth is synthesize by– **Hypothalamus**
- Hormones involved in carbohydrate metabolism are– **Insulin, glucagon, epinephrine, glucocorticoids**
- Oxytocin hormone is secreted by– **Pituitary**
- Ovulation in human is controlled by– **FSH and LH**
- MSH is secreted by– **Pars intermedia**
- Secretion of estrogen is controlled by– **FSH**
- FSH is a– **Glycoprotein**
- Secretin is secreted from– **Endocrine gland and acts on an exocrine gland**
- The process of spermatogenesis and sperm formation is under the regulatory influence of– **FSH**
- Hormones are called chemical signals that stimulate specific target tissues. ..... the correct location of these receptors in case of protein hormones. **Plasma membrane**
- ..... does not play any role in calcium balance in the human body. **Thymosin**
- ..... the organs in mammals does not consist of a central 'medullary' region surrounded by a cortical region. **Liver**
- The conditions that is not linked to deficiency of thyroid hormone– **Exopthalmia**
- Melatonin is secreted by– **Pineal body**
- The function of pineal body is to– **Lighten the skin colour, control sexual behaviour Regulate the menstrual cycle**
- The gonadotrophic hormones are secreted by– **Anterior lobe of pituitary**
- LH and FSH are collectively called– **Gonadotrophins**
- The function of oxytocin is to help in– **Child birth**
- Diabetes insipidus occurs due to the hyposecretion of– **Vasopressin**
- Secretion of ..... is under control of neurosecretory nerve cells. **Anterior pituitary**
- The effect of GnRH produced by hypothalamus is– **Stimulates the synthesis and release of androgens**
- TSH (thyroid stimulating hormone) is produced by– **Anterior pituitary lobe**
- Adrenocorticotrophic hormone is secreted by– **Anterior pituitary**
- MSH is secreted by– **Pars intermedia**
- FSH is secreted by– **Anterior lobe of pituitary**
- With reference to the pituitary is– **Neurohypophysis collects and stores vasopressin and oxytocin**
- Endocrine glands regulate neural activity, and nervous system regulates endocrine glands– **True**
- Hormones can be composed of– **Steroid, Peptides, Amino acid derivative**
- Hormones reach their target organs via– **Blood**
- Endocrine glands can be defined as those glands which pour their secretion– **Directly into blood**
- Salivary gland is not– **Ductless gland**
- Exclusively comprises endocrine glands– **Pituitary, Thyroid, Adrenal, Ovary, Testis**
- Ductless glands are called– **Endocrine glands**
- Secretion of ductless glands are known as– **Hormones**
- The growth of the mammary glands and formation of milk in them is regulated by– **Prolactin**
- Ovulation in human female is controlled by– **LH**
- Acromegaly is caused by– **Pituitary gland**
- Pituitary gland is under the neural regulation of– **Hypothalamus**
- FSH and LH are– **Gonadotropin hormones**
- Effect of prolactin hormone is on– **Mammary glands**
- Parathormone possess– **Thyrocalcitonin**

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- Samatostatin is secreted by– **Hypothalamus**
- FSH is involved in– **Spermatogenesis**
- The hormone secreted by intermediate lobe of pituitary is– **MSH**
- The hormone secreting cells of the hypothalamus are called– **Neurosecretory cells**
- Hormone melatonin is secreted by– **Pineal**
- Spermatogenesis in mammals is controlled by– **F.S.H. (Follicle stimulating hormone)**
- The number of hormones secreted from anterior pituitary is– **6**
- MSH of pars intermedia of middle pituitary is responsible for– **Maintaining body temperature, and the normal rhythm of sleep-wake cycle**
- Decreased production of TSH in early life causes– **Dwarfism**
- Melanocyte stimulating hormone (MSH) is secreted by which lobe of pituitary– **Intermediate lobe**
- Pineal gland develops from– **Dorsal part of diencephalon**
- Daily rhythms are associated with– **Pineal**
- Hormone GnRH is secreted by– **Pineal**
- Diabetes insipidus is under control of– **ADH**
- The hormone ADH is secreted from– **Posterior lobe of pituitary**
- Release of milk from mother's breast is mediated through– **Oxytocin**
- Removal of a part of pituitary affected excretory system. It causes– **Atrophy of adrenal cortex**
- ..... the hormones does not have a particular target organ in the body. **Growth hormone**

19.2 Thyroid and Parathyroid Gland

- 'Exophthalmic goitre' (Grave's disease) is caused due to– **Hyperfunction of the thyroid**
- Calcitonin lowers the calcium level in the blood. This is secreted by– **Thyroid**
- Erythropoietin hormone the stimulates that R.B.C. formation is prouced by– **Juxtaglomerular cells of the kidney**
- A person is having problem with calcium and phosphorus metabolism in his body. The glands that may not be functioning properly– **Parathyroid**
- Increase in bleeding time and delay in blood coagulation is due to the deficiency of that hormone is– **Parathyroid hormone**
- The function of thyrocalcitonin is– **It decreases calcium level in blood**
- The hormone that increase calcium levels in the blood– **PTH**
- The hormone, which is related to the urine concentration in mammals is– **Antidiuretic hormone (ADH)**
- Excess secretion of growth hormone in adults leads to– **Acromegaly**
- Under secretion of thyroxine in children cause– **Cretinism**
- Goitre is associated with– **Thyroxine**
- Blood calcium is increased by administration of– **Parathormone**
- Ca^{2+} level is controlled by– **Thyroid and Parathyroid**
- Dificiency of iodine in our diet leads to– **Goitre**
- Thyroid gland contains– **Follicles, stromal tissue**
- The basal metabolic rate (BMR) in body cells is regulated by– **Thyroid**
- Element is crucial for the normal functioning of the thyroid gland– **Iodine**
- Parathormone deficiency leads to– **Decrease of Ca^{+2} level in blood**
- Cretinism is due to less secretion of– **Thyroid**
- TCT is secreted by the– **Thyroid gland**
- Parathyroid glands do humans possess– **4**
- Hyperthyroidism is responsible for– **Graves disease, Exophthalmic goitre**
- Goitre influences– **Metabolism**
- Small amount of iodine is added to common salt so that– **Occurrence of goitre is prevented**
- A person has protruding eyes, weight loss and higher body temperature. He is suffering from– **Graves disease**

19.3 Thymus and Adrenal Gland

- Cortisol is ..... hormone and stimulates gluconeogenesis. **Adrenal cortex**
- An over dose of intravenous insulin may lead to the death of an individual due to– **An excessive decrease in blood glucose**
- The gland is degenerated in old individuals resulting in a decreased production of hormone related with weak immune system– **Thymus**
- ..... hormone stimulating transport of glucose from blood to muscle and adipose tissue. **Insulin**
- Catecholamines of adrenal gland stimulate– **Increase alertness, Pupilary dilation and Piloerection and sweating**
- Loss of glucose through urine and formation of harmful compounds like ketone bodies leads to a complex disorder like– **Diabetes mellitus showing glycosurea and ketonurea**
- Blood pressure is controlled by– **Adrenal gland**
- Cushing's syndrome and myxoedema are associated with .....glands. **Adrenal, Thyroid**
- Hormones in excess is considered as diabetogenic hormones– **Cortisol**

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- Suppression of immune system may be observed due to– **Cortisol activity, Deficiency of thymosin**
- ACTH stimulates synthesis and secretion of– **Cortisol hormones**
- Hypersecretion of growth hormone in adults does not cause further increase in height, because– **Epiphyseal plates close after adolescence**
- The gland that causes atrophies in adults– **Thymus gland**
- Termed temporary gland is– **Thymus**
- Adrenals are located above– **Kidney**
- Feeling the tremors of an earthquake, a scared resident of seventh floor of a multistoreyed building starts climbing down the stairs rapidly. The hormone that initiated this action– **Adrenaline**
- The hormone that causes dilation of pupil, increased heart beat and breakdown of glycogen– **Adrenaline**
- Arrangement of layers in the adrenal cortex from outer to inner side is– **Zona glomerulosa, zona fasciculata, zona reticularis**
- Thymus gland shape is – **Lobular**
- Addison's disease is caused by underproduction of hormones secreted by– **Adrenal cortex**
- Adrenal glands is located– **Above the kidneys**
- Deficiency of adrenal cortex hormones disease caused by– **Addison's disease**
- The name of the outer layer of the adrenal cortex– **Zona glomerulosa**
- The adrenal cortex can be divided into – **3 layers**
- Hormone control balance of water and electrolytes in our body– **Corticoids**
- Hormone possess anti - insulin effect– **Cortisol**
- Adrenal cortex produces– **Aldosterone**
- Emergency gland is– **Adrenal**
- Hormones generates lipolysis and proteolysis and also inhibits cellular uptake– **Glucocorticoid**
- Undersecretion of adrenal cortex causes– **Addison's disease**
- Endocrine gland responsible for immunity is– **Thymus**
- Adrenal gland is associated with– **Kidney**
- Source of somatostatin is the same as that of– **Insulin and glucagon**
- Extension of sympathetic nervous system is– **Adrenal medulla**

19.4 Hormones of Pancreas, Testis and Ovary

- In human, testosterone is produced by– **Leydig cell**
- The hormone secretin is produced in– **Small intestine and stimulated pancreas**
- Steroid hormones are produced only by the– **Sex organs and adrenal cortex**
- Alveolar growth in mammary gland is function of– **Progestrogen**
- ..... hormone stimulates a vigorous contraction of uterus at the time of child birth and milk ejection from the mammary gland. **Oxytocin**
- The posterior lobe of pituitary gland is not a 'true' endocrine gland because– **It only stores and releases hormones**
- The islets of Langerhans are found in– **Pancreas**
- Ketone bodies are formed when insulin secretion is not sufficient– **True**
- Hyperglycemia leads to– **Loss of glucose through urine, Formation of ketone bodies**
- A patient of diabetes mellitus excretes glucose in urine even when he is kept on a carbohydrate free diet. It is because– **Fats are catabolised in adipose tissues to form glucose**
- Regarding testis is true– **It acts as a primary male sex organ, It acts as an endocrine gland**
- The hormones that is necessary for the development of secondary sexual characters in human beings– **Estrogen, Testosterone**
- Estrogen and progesterone are hormones of– **Ovary**
- Type of cells of the Islet of Langerhans is responsible for hyperglycemia– **β-cells**
- The gland..... is exocrine and endocrine. **Pancreas**
- Male hormone is produced in the testis by cells of– **Pancreas**
- Progesterone is– **Hormone concerned with retention and growth of pregnancy**
- Occurence of Leydig cells and their secretion is– **Testis and testosterone**
- Corpus luteum is a source of– **Progesterone**
- .....supports pregnancy and stimulates milk secretion is. **Progesterone**
- A temporary endocrine gland formed in ovary after ovulation is– **Corpus luteum**
- The hormone that stimulates milk secretion in female– **Prolactin**

19.5 Hormones of Heart, Kidney and Gastrointestinal Tract

- The hormones that though synthesised elsewhere, is stored and released by the master gland– **Antidiuretic hormone**
- Pancreas secrete is - **Insuline and glucagon**

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- Structures of heart secrete hormones– **Atrial wall**
- The effect of secretion of ANS is– **Dilates blood vessels**
- The hormone bring about the contraction of gall bladder is– **CCK**
- .....part of kidney produces erythropoietin. **Juxtaglomerular apparatus**
- Gastro-intestinal hormone is– **Cholecystokinin**
- Increased blood pressure results in– **ANF secretion, Dilation of blood vessels**
- A peptide hormone secreted by JGA cells are– **Erythropoietin**
- Growth factors are– **Secreted by non-endocrine tissues**
- Peptide hormone acts on both pancreas and gall bladder & stimulates secretion of pancreatic enzymes is– **Cholecystokinin**

19.6 Mechanism of Hormone action

- According to the accepted concept of hormone action, if receptor molecules are removed from target organs, then the target organ will– **not respond to the hormone**
- ..... proteinaceous in chemical nature. **Glucagon**
- Insulin is a– **Protein**
- Steroid hormones is– **Estrogen**
- The hormones that endocrine glands lacks peptides, amines and sulphur is– **Testes**
- Polypeptide is not a– **Thyroxine**
- The hormones that never reaches to cytoplasm– **FSH**
- The signal transduction of steroid hormone across cell is through– **Binding of hormone to the cytoplasm receptor and the complex binds to hormone response element on DNA within promoter DNA**
- Estrogen and testosterone are steroid hormones, and most likely bind to– **Cytoplasmic receptors**
- Ovarian hormones are usually– **Steroids**
- In heart cells, ... is a second messenger that speeds up muscle contraction in response to adrenaline. **cAMP**
- Hormone derived from amino-acid is– **Epinephrine**

19.7 Miscellaneous

- In heart cells ..... serves as a second messenger, speeding up muscle cell contraction in response to adrenaline. **cAMP**
- Tetany is condition in man caused by– **Hyposecretion of PTH**
- Sleep-wake cycle and menstrual cycle maintained by– **Melatonin**
- ..... hormone acts upon the renal tubule and blood capillaries. **Vasopressin**
- Diabetes insipidus is caused due to the deficiency of– **Vasopressin**
- Hormones of pituitary gland are– **All proteins**
- Antagonistic set of hormones include– **Insulin and Glucagon, Gastrin and GIP and Parathyroid hormone and Thyrocalcitonin**
- .....responsible for secretion of water and bicarbonate ions from exocrine part of pancreas. **Secretin**
- A pregnant female delivers a baby who suffers from stunted growth, mental retardation, low intelligence quotient and abnormal skin. This is the result of– **Deficiency of iodine in diet**
- Mary is about to face an interview but during the first five minutes before the interview she experiences sweating, increased rate of heart beat, respiration, etc. The hormone that is responsible for the restlessness– **Adrenaline & noradrenaline**
- The steroid responsible for balance of water and electrolytes in our body is– **Aldosterone**
- Thymosin is responsible for– **Differentiation of T-lymphocytes**
- In the mechanism of action of a protein hormone, one of the second messengers is– **Cyclic AMP**
- Leydig cells produce a group of hormones called– **Androgens**
- Corpus luteum secretes a hormone called– **Progesterone**
- Cortisol is secreted by– **Adrenal**
- A hormone responsible for normal sleep-wake cycle is– **Melatonin**
- Erythropoietin hormone, which stimulates RBC formation is produced by– **Juxtaglomerular cells of the kidney**
- Presence of ..... in urine are indicative of Diabetes mellitus. **Ketonuria and Glycosuria**
- Hormones stored and released from neurohypophysis are– **Oxytocin & Vasopressin**
- .....steroid hormone influence the cellular activities. **Binding to DNA and forming a gene-hormone complex**
- An amino acid derived hormone is– **Epinephrine**
- Hormones can play a significant role in osteoporesis– **Estrogen and Parathyroid hormone**

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EXAM POINT

Endocrine gland and Hormones		
Thyroxine is–	**Amine hormone**	**TS EAMCET-10.05.2023, Shift-II**
The secretion of these glands washes out the acidic urinary residues that remain in urethra–	**Cowper's glands**	**TS EAMCET-11.05.2023, Shift-II**
Progestasert is–	**Hormone releasing intra uterine device**	**TS EAMCET-11.05.2023, Shift-II**
These hormone play a major role in regulating circadian rhythms–	**Melatonin**	**TS EAMCET-11.05.2023, Shift-I**
Temporary endocrine gland in the human body is–	**Corpus luteum**	**AP EAPCET-23.05.2023, Shift-I**
Steroid hormones are similar in structure to–	**Cholesterol**	**APEAPCET - 12.7.2022 Shift - I, BVP-2010, AIIMS - 1994**
The hormone that is a modified amino acid–	**Epinephrine**	**JCECE-2009**
The largest gland that in an adult man–	**Liver**	**Rajasthan PMT - 2008 / CGPMT - 2008, UP CPMT-2012, 2008 / J&K CET - 2003, Karnataka CET - 2000**
The term hormone was given by–	**Starling for secretin**	**HP CET-2011 / VMMC - 2005, AMU - 2004 /BVP - 2003**
Father of Endocrinology–	**Thomas Addison**	**VMMC-2012 / UP CPMT-2008, Rajasthan PMT-2008 / CG PMT-2007, 2008**
Endocrine glands produce or action of endocrine gland is mediated through–	**Hormones**	**CG PMT-2007**
All functions of the body are regulated and integrated by–	**Neuroendocrine system**	**CG PMT-2007**
Chemically hormones are–	**Proteins, steroids and biogenic amines**	**CG PMT-2006 JIPMER-1998**
Steroid hormones easily pass through the plasma membrane by simple diffusion because they–	**are lipid soluble**	**DUMET-2009**
Chemical messenger is known as –	**Hormone**	**Haryana PMT-2003**
Which is used for animal communication–	**Pheromone**	**Punjab MET 2009, CMC Vellore-2009**
Reabsorption of Na^+ is controlled by …….. hormones–	**Aldosterone**	**AMU-2001**
The steroid that sex hormone influences secondary sex organs–	**Oestrogen**	**MGIMS Wardha-2003**
Failure of ovulation due to deficiency of –	**Luteinizing hormone**	**Manipal-2007 / AIPMT-2004**
Endocrine glands–	**do not possess ducts**	**J&K CET-2002**
A chemical signal that has both endocrine and neural roles is–	**Epinephrine**	**AIPMT-2015**
A temporary endocrine gland in the human body is–	**Corpus luteum**	**NEET-2017**
Bradykinin is a–	**Hormone**	**JIPMER-2019**
The types of glands that is the secretion collected inside the cell and discharged by disintegration of entire gland–	**Holocrine**	**KVPY SB & SX-2014**
Hormones are distributed to the different body parts by–	**Blood**	**Rajasthan PMT-2001**
A steroid hormone …… regulates glucose metabolism is.	**Cortisol**	**BCECE-2013**
ADH deficiency shows the condition–	**Polydipsia, Polyuria**	**J&K CET-2011**

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Erythropoietin is secreted from– **Kidney**	**J&K CET-2011**
The endocrine gland which is responsible for immunity – **Thymus**	**AP EAMCET-24.09.2020 Shift-I**
Chemicals which are synthesised by one organism and affect the behavior of another member of the same species are called– **Pheromones**	**Punjab MET-2005**
The messengers enter into target cells and bind with specific receptor and activates specific genes to form protein, these are called - **Steroid hormones**	**UP CPMT-2006**
Hypothalamus	
Thermoregulatory centre of human body is associated with– **Hypothalamus**	**AP EAMCET-05.10.2021 Shift-I, JIPMER-2019, Punjab MET-2009**
The specific region of hypothalamus, responsible for physiological sweat secretion, is– **Para-ventricular nucleus**	**WB JEE-2009**
In mammals, the hormones secreted by the pituitary, the master gland, is itself regulated by– **Hypothalamus**	**KVPY SB & SX-2012**
Hormones of hypothalamus are called– **Releasing hormones**	**JIPMER-2000**
The hormone which helps in the reabsorption of water in kidney tubules is– **Anti diuretic hormone (ADH)**	**J&K CET-2007**
Hormones stored and released from neurohypophysis are– **Oxytocin and Vasopressin**	**NEET-2020 Phase-II / JCECE-2015, J&K CET-2009 / WB JEE-2006, Rajasthan PMT-2000**
Injury localized to the hypothalamus would most likely disrupt– **Regulation of body temperature**	**AIPMT-2014**
The effect of GnRH produced by hypothalamus– **Stimulates the synthesis and secretion of androgens**	**AIIMS-2010**
In the homeostatic control of blood sugar level, the organs that function as modulator and effector respectively– **Hypothalamus and islet of Langerhans**	**AIIMS-2015**
Osmoreceptors are present in the– **Hypothalamus**	**MHT CET-2016**
Pituitary gland	
Deficiency of ADH (Anti diuretic hormone) or Vasopressin results in– **Diuresis**	**AP EAPCET-23.05.2023, Shift-II**
Pigmentation of skin is due to– **Melanocytes**	**AFMC-2001**
The smallest endocrine gland is– **Pituitary**	**Rajasthan PMT-2009 / CMC Vellore-2009, Punjab MET-2009 /UPCPMT - 2009**
Hypersecretion of growth hormone in the period of growth lead to– **Acromegaly**	**MGIMS Wardha-2010, 2007 / UP CPMT-2004, MGIMS Wardha-2004 / Rajasthan PMT-2007, AIPMT-2002 / MHT CET-2016**
Mammalian prolactin is secreted by– **Adenohypophysis**	**UP CPMT-2004, MGIMS Wardha-2004**
Hormone responsible for the secretion of milk after parturition is– **Prolactin**	**JIPMER-2013 / WB JEE-2010**
ACTH is secreted by– **Pituitary gland**	**WBJEE - 2011 / DUMET - 2005 / UP CPMT-2003**

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Melanocyte Stimulating Hormone (MSH) is produced by– **Pars intermedia of pituitary**	**AFMC-2007**
A person passes much urine and drinks much water but his blood glucose level is normal. This conditions may be the result of– **A reduction in vasopressin secretion from posterior pituitary**	**Rajasthan PMT-2010**
Blood pressure and activity of non-striated muscles are dependent on the hormone secretion of– **Posterior lobe of pituitary gland**	**Rajasthan PMT-1998**
Diabetes insipidus occurs due to hyposecretion of– **Vasopressin**	**AMU-2011 / Karnataka CET-2002, Rajasthan PMT-1998**
LH in human female is called– **Ovulation hormone**	**BCECE-2014**
Gigantism and acromegaly are due to– **Hyperpituitarism**	**Uttarakhand PMT-2009/VMMC-2009/BVP-2009, JIPMER - 2012 / KVPY SA-2012/ JIPMER-1996**
Gonadotropins are secreted from– **Anterior pituitary**	**Punjab MET - 2010 / MGIMS Wardha-2009, DUMET-2001 / JIPMER - 1996**
Posterior pituitary gland is– **Stores and releases ADH and oxytocin**	**JIPMER-2016 / MGIMS Wardha-2009, Karnataka CET-2006 / JIPMER-2002, Rajasthan PMT-1995**
If the pituitary gland of an adult rat is surgically removed, the endocrine glands that will be less affected– **Adrenal medulla**	**DUMET-2009 /JCECE-2012**
Sertoli cells are regulated by the pituitary hormone known as– **FSH**	**GUJCET-2016 / JCECE - 2013,2009, CMC Vellore - 2012 / Manipal -2012, BHU PMT(mains) - 2010 / CMC Ludhiana-2009, AFMC - 2008 / DUMET – 2007/ AIPMT-2006**
Hormone prolactin is secreted by– **Anterior pituitary**	**BCECE-2004**
Sella turcica is found– **Near pituitary**	**MGIMS Wardha-2010 / AIIMS-2001**
Chromophil cells are found in– **Anterior pituitary**	**Manipal-2006**
..... hormone acts on the sertoli cells and stimulates secretion of some factors which help in the process of spermiogenesis. **FSH (Follicle Stimulating Hormone)**	**GUJCET-2022 / WB JEE-2014, JIPMER-2012 / BVP-2009, VMMC-2009 / Punjab MET-2006**
Dwarfism in childhood, such as Frohlich and Lorain dwarfs in humans, develop due to– **Hyposecretion of somatotropin**	**MHT CET-08.10.2020 Shift-I**
It regulates cell division, protein synthesis and growth of the bone– **Somatotropic hormone**	**GUJCET-2011**
Melanocyte stimulating hormone is secreted by– **Intermediate lobe of pituitary**	**BVP-2001 / AIPMT-2000**
An adenohypophysis hormone which is regulated by feedback mechanism is– **TSH (Thyroid Stimulating Hormone)**	**Kerala PMT-2009**
The pituitary hormones that works indirectly– **TSH**	**JIPMER-2018**
Formation of corpus luteum is induced by– **LH (Luteinizing Hormone)**	**JIPMER-2018**
Secretion is under control of neurosecretory nerve axons in– **Posterior pituitary**	**UP CPMT-2009 AIPMT-2006 Punjab MET-2005**
Growth hormone and thyroxin increase the length of– **Bone**	**AIIMS-26.05.2018 Shift-I**

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Gorilla like man with large heads and protruding jaws, is produced due to– **Over secretion growth hormone since maturity**	**CG PMT-2005**
At cellular level, GH affects growth by controlling the production of– **mRNA**	**CG PMT-2005**
The hormone that produced by the pituitary gland in both males and females but functional only in females– **Prolactin**	**Karnataka CET-2005**
The pituitary hormones that is secreted without the involvement of a releasing hormone (RH)– **Oxytocin**	**WB JEE-2014**
Pituitary lies in the sella turcica of– **Sphenoid**	**CMC Vellore-2011**
Changes in GnRH pulse frequency in females is controlled by circulating levels of– **Estrogen and progesterone**	**NEET-2016 Phase-I**
Pineal gland	
An endocrine gland in human, that plays an important role in the regulation of rhythm of the body is– **Pineal gland**	**AP EAMCET-06.09.2021 Shift-I / GUJCET-2018, J&K CET-2014 / AIPMT-2014, UP CPMT-2011 / JIPMER-2001**
Lighten the skin colours, control sexual behaviour, regulates the period of puberty in the body, these function are- **Pineal body**	**UP CPMT-2008 / VMMC-2012 / JIPMER-2009, Uttarakhand PMT-2008 / Manipal-2008, CGPMT-2008 / Rajasthan PMT-2008, BVP-2012, 2007 / MGIMS Wardha-2006**
After 14 years of age among men, the gland that disappears is– **Thymus**	**Punjab MET-2004, Manipal-2000**
The amino acid Tryptophan is the precursor for the synthesis of– **Melatonin and Serotonin**	**NEET-2016 Phase-I**
Pineal gland of human brain secretes melatonin concerned with– **Sleep**	**Karnataka CET-2007**
Thyroid gland	
Goitre can occur as a consequence of– **Iodine deficiency**	**WB JEE-2009**
Tetraiodothyronine refers to– **Thyroxine**	**AMU-2015**
The endocrine gland called …..... secretes calcitonin hormone that regulates the Ca^{++} in blood by. **Thyroid- reduction in Ca^{++} concentration**	**Rajasthan PMT-1996**
The hormone acts that opposite to the parathormone– **Thyrocalcitonin**	**Rajasthan PMT-1996**
Chronical disturbance in hormone secretion of thyroid gland causes– **Goitre**	**CG PMT-2010 / DUMET-2005 / UP CPMT-2003**
Growth hormone activity is increased by– **Thyroxine**	**Manipal-2011**
One mg of thyroxin increases the metabolic rate to about– **15%**	**AMU -2000**
The glands that is associated with the consumption of iodised salt– **Thyroid**	**JIPMER-2001**
Hypoparathyroidism leads to– **Tetany**	**AP EAMCET-2001**
Pot-belly and pigeon-chest with protruding tongue are the symptoms of– **Cretinism**	**VMMC-2015**
Function of thyroxine hormone is– **To control metabolism**	**Rajasthan PMT-2006**
Deficiency of thyroid hormone causes– **Myxoedema**	**JCECE-2008 / UP CPMT-2006 / AMU-1996**
Increased blood pressure and heart rate, deposition of fats in eye sockets and weight loss are found in– **Grave's disease**	**MHT CET 5.10.2020 Shift-I / MHT CET-2017, GUJCET-2011**
32-amino acid water soluble peptide hormone is– **Calcitonin**	**AMU-2010**
Physiologically active thyroxine exists in the form of– **Unbound**	**WB JEE-2006**
The hormone that possesses anti-insulin effect– **Cortisol**	**AIPMT-1988**
The largest endocrine gland in human body is– **Thyroid**	**MHT CET-2014 J&K CET-2004**

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The organ that absorbs maximum quantity of iodine– **Thyroid**	**Rajasthan PMT-1995**
The basal metabolism rate of the body is regulated by– **Thyroid**	**Rajasthan PMT-2001**
Young hyaline matrix of true bone in which calcium salts are deposited are called – **Osteoid**	**WB JEE-2015**
The immediate precursor of thyroxine is– **Tyrosine**	**KVPY (SA)-05.11.2017**
The hormone that produces calorigenic effect is– **Thyroxine**	**JIPMER-2015**
Parathyroid and Thymus	
The hormone that increase blood calcium levels by promoting absorption of Ca^{2+} from gastro intestinal tract is– **Calcitriol**	
The most accepted theory of ageing is– **Thymus gland becomes non-functional**	**WB JEE-2006**
Gland responsible for calcium metabolism is– **Parathyroid**	**UP CPMT-2011 / Rajasthan PMT-2009, Punjab MET-2009 / UP CPMT-2009, CMC Vellore-2009**
The hormone that regulates the calcium level of blood is– **Parathormone**	**DUMET-2009 / Punjab MET-2004, 2003, Manipal-2000 / Punjab MET-1999, Rajasthan PMT-1995 / AP EAMCET-1998**
If parathyroid gland degenerates the activity that is disturbed– **Calcium concentration**	**BVP-2010**
Hassall corpuscles are characteristic of – **Thymus**	**AFMC -2011 / DUMET-2006**
The modern idea about ageing is that our body slowly loses the power of defence against the invasion of germs and pathogens. This process starts by the disappearance of, organ is– **Thymus gland**	**UP CPMT-2001**
Growth in the first 10-13 years of age is controlled by– **Thymosin**	**CG PMT-2007**
Parathormone induces– **Increase in serum calcium level**	**Haryana PMT-1999**
Parathormone deficiency in man causes– **Hypocalcemia**	**CG PMT-2006, 2005**
Parathyroid hormone is a– **Peptide**	**Haryana PMT-2003, JCECE-2004**
The hormone that is responsible for regulation of calcium levels in our blood– **Thyrocalcitonin**	**JCECE-2015**
Parathormone (PTH) is– **Increases blood Ca level and decreases bone Ca level**	**JIPMER-2004, AMU-1996**
Osteitis fibrosa cystica develops due to the– **Hyper parathyroidism**	**CMC Ludhiana-2015**
The conditions that will stimulate parathyroid gland to release parathyroid hormone– **Fall in blood Ca^{+2} levels**	**NEET (Odisha)-2019 / WB JEE-2011, VMMC-2007 / Rajasthan PMT-2005**
Removal or absence of thymus in early life shall bring about– **Lack of lymphocytes, Lack of antibodies, Lack of lymph nodes**	**UP CPMT-2009 / Rajasthan PMT-1998**
Increase in bleeding time and delay in blood coagulation is due to the deficiency of, the hormone is– **Parathormone**	**UP CPMT-2007**
A gland called 'Clock of ageing' that gradually reduces and degenerates in ageing is– **Thymus**	**AIIMS-2014**
The hormones that coordinate with each other to maintain ideal blood Ca level is– **Thyrocalcitonin and Parathyroid hormone**	**AIIMS-26.05.2018 Shift-II / BCECE-2007, Rajasthan PMT-2000**
The hormones that regulate calcium levels in the human body– **Calcitonin, Parathyroid hormone**	**TS EAMCET-08.05.2019 Shift-I, MP PMT-2013 / JIPMER-2011**

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Damage to thymus in a child may lead to–	**Loss of cell mediated immunity**	**Uttarakhand PMT-2010 / Manipal -2009, Karnataka CET-2009 / JIPMER-2007**
Hypercalcemic hormone is–	**PTH**	**MHT CET-2016**
The hormone that stimulates the reabsorption of Ca^{++} ions in the uriniferous tubules is–	**Parathormone**	**TS EAMCET-29.09.2020 Shift-II**
Tetany is caused by–	**Hypoparathyroidism**	**WB JEE-2011**
The gland that atrophies in adult is–	**Thymus**	**DUMET-2006**
Thymosin hormone is secreted by–	**Thymus gland**	**DUMET-2011**
The activities that is disturbed, if parathyroid gland degenerates –	**Calcium concentration**	**J&K CET-2013**
Mammalian thymus is mainly concerned with–	**Immunological functions**	**Rajasthan PMT-2008, CG PMT-2008**
A gland gradually that atrophies at the age of 14-16 due to the activities of sex gland is–	**Thymus**	**CMC Vellore-2008**
The hormone that stimulates the development and differentiation of T-lymphocytes is–	**Thymosin**	**GUJCET-2018**
The blood calcium level is lowered by the deficiency of–	**Parathormone**	**AIPMT-2008 / AIPMT-1999**
A person is having problems with calcium and phosphorus metabolism in his body. The glands that may not be functioning properly–	**Parathyroid**	**Rajasthan PMT-2010 / AIPMT-2007**
The gland that decreases in size with increasing age is–	**Thymus**	**AP EAMCET-05.10.2021 Shift-I / WB JEE-2007, CG PMT-2004 / AIPMT-1999**
Adrenal Gland and Pancreas		
Function of aldosterone is–	**Stimulation of re absorption of Na^+ and water form renal tubules**	**AP EAPCET-22.05.2023, Shift-I**
Fight or flight responses are due to–	**Release of adrenal medullary hormones and high sympathetic tone**	**AP EAPCET-23.05.2023, Shift-I**
The hormones that is a polypeptide–	**Insulin**	**AMU-1999**
Hormones secreted by pancreas are–	**Insulin and glucagon**	**KVPY SA-2014 / WB JEE-2006, J&K CET-2006 / DUMET-2005, UP CPMT-2003 / Rajasthan PMT-1995**
Production of glucose from amino acids, fatty acids and glycerol is called–	**Gluconeogenesis**	**VMMC-2011**
The chemical nature of hormones secreted by α and β cells of pancreas is–	**Polypeptide**	**WB JEE-2009**
Islets of Langerhans are found as–	**Endocrine pancreas**	**VMMC-2012 / WB JEE-2010, CG PMT-2008 / Rajasthan PMT-2008, UP CPMT-2008**
The function of nor-epinephrine is–	**Increase blood pressure**	**Rajasthan PMT-2006, 2004**
The both exocrine and endocrine gland is–	**Pancreas**	**HP CET-2012 / VMMC-2004, JIPMER-2004 / Punjab MET-2003, AFMC-2000 / Manipal-2001**
If ADH level of blood is less–	**Volume of urine increases**	**BCECE-2005**
The hormones that is a modified amino acid–	**Epinephrine**	**JCECE-2014 / CMC Ludhiana-2009, BCECE-2011 / Kerala PMT-2011, AFMC-2008 /Manipal-2007 CG-PMT-2006, AIIMS-1999**

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Addisons disease results from– **Hyposecretion of adrenal cortex**	**BHU PMT (Screening)-2011 / BVP-2008, Uttarakhand PMT-2007 / JCECE-2004, Haryana PMT-2003**
..... accelerates heart beat due to stimulation of adrenal, medulla by sympathetic nerves. **Adrenaline**	**VMMC-2013**
When a person suffers from a marked fall in blood pressure, it is helpful to administer to him the hormone is– **Adrenaline**	**Manipal-2011**
Heart beat increases at the time of interview because– **Secretion of adrenaline**	**AIIMS-1999 / BHU PMT (Screening)-2010, WB JEE-2010**
Glomerular area of adrenal cortex is responsible for– **Water and electrolyte balance**	**Rajasthan PMT-1998**
Adrenal medulla is derived from– **Ectoderm**	**Rajasthan PMT-1998**
The hyposecretion of the hormones that leads to loss of sodium and water through urine, low blood pressure and hypotension is– **Hormones of adrenal cortex**	**BCECE-2010**
Diabetes insipidus is due to– **Hyposecretion of vasopressin**	**KVPY SB & SX-2012**
The process of formation of glucose from non carbohydrate sources is called– **Gluconeogenesis**	**HP CET-2013**
The process of formation of glycogen from glucose is called– **Glycogenesis**	**Uttarakhand-2005**
The hormone that causes dilation of blood vessels, increased oxygen consumption and glycogenolysis is – **Adrenaline**	**Manipal-2015/ JCECE=2013**
Increase of blood sugar level is known as– **Diabetes mellitus**	**Haryana PMT-2004 / Manipal-2003**
Water reabsorption in kidney is controlled by– **ADH**	**CMC Ludhiana-2008 / VMMC-2014**
Deficiency that causes obesity, low plasma Na^+, high K^+ and increase blood pressure is– **Cortisol**	**JIPMER-2001**
Rise in heart beat, cardiac output, blood pressure and blood sugar occurs during emergency by hormone– **Norepinephrine**	**VMMC-2008 / AMU-2008**
Triple "F" or gland for flight, fight and fright/life saving/emergency gland is– **Adrenal**	**Karnataka CET-2018 / AIPMT-2014 / HP CET-2012, UPCPMT-2012 / WB JEE-2010 / JIPMER-2009, CMC Ludhiana-2008 / UP CPMT-2012, 2008, MGIMS Wardha-2008 / CG PMT-2008, AMU-2008 / VMMC-2008,2004, Rajasthan PMT-2008, 2001 / JCECE-2008, UP CPMT-2007 / AMU-2006,2002, CG PMT-2005 / AFMC-2002, Rajasthan PMT-2001 / JIPMER-1996**
Chymotrypsin is produced by– **Pancreas**	**AMU-2005 / Uttarakhand PMT-2004**
Cushing's syndrome and myxoedema are associated with these glands respectively– **Adrenal, thyroid**	**HP CET-2011/ VMMC-2005 / AMU-2004 /BVP-2003**
The hormone used for suppressing allergies, rheumatoid arthritis and tissue inflammation is– **Glucocorticoid**	**AP EAMCET-2002**
Blood pressure is controlled by– **Adrenal**	**Haryana PMT-2003 / MGIMS Wardha-2012**
Adrenal gland is associated with– **Kidney**	**Haryana PMT-2003 / AFMC-2003**

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A man suffering from diabetes mellitus drinks water more frequently as he has to– **Eliminate extra glucose from blood**	**CMC Ludhiana-2014**
The animated hormone is– **Epinephrine**	**VMMC-2008 / AMU-2008**
The hormone of adrenal medulla is– **Epinephrine**	**J&K CET-2007**
Norepinephrine is secreted from– **Medulla of adrenal**	**Rajasthan PMT-2000**
A patient of diabetes mellitus excretes glucose in urine even when he is kept in a carbohydrate free diet. It is because– **Fats are catabolised to form glucose**	**Manipal-2010 / AIIM -2008**
F-cells of islets of Langerhans secretes Pancreatic Polypeptide (PP). It– **Inhibits the release of digestive secretion from the pancreas**	**CMC Ludhiana-2007**
Over secretion of androgens from adrenal cortex in females is responsible for– **Appearance of masculine characters**	**CMC Ludhiana-2007**
Adrenaline and nor-adrenaline are hormones and acts as– **Neurotransmitter**	**BCECE-2015 / JIPMER-2014, BCECE-2008 / UPCPMT-2006**
Increase glucose level in human is called– **Hyperglycemia**	**BCECE-2004**
Insulin deficiency causes is– **Diabetes mellitus**	**J&K CET-2007 / BCECE-2004**
Function of the somatostatin is to– **Stimulate the secretion of thyrotropin from thyroid**	**DUMET-2011 / Kerala PMT-2015 / AIIMS-2003**
Epinephrine hormone is secreted from ..... endocrine gland. **Adrenal**	**Tripura JEE-2018 / Tripura JEE-2017, Kerala PMT-2012 / Punjab MET-2011**
Heterocrine gland is a– **Pancreas**	**JIPMER-2004**
Mineralocorticoid is a– **Aldosterone**	**WB JEE-2011**
Adrenaline direct affect on– **S.A. Node**	**AIPMT-2002**
A 22 year old girl is about to face interview. She is restless, is sweating and her heart beats have increased. These symptoms are due to increased secretion mainly of– **Catecholamines**	**MHT CET-04.10.2020 Shift-I, TS EAMCET-29.09.2020 Shift-I / AMU-1996**
Conn's disease is caused by the over secretion of– **Aldosterone**	**AIIMS-1999**
A steroid hormone which regulates glucose metabolism is– **Cortisol**	**BHU PMT (Mains)-2010**
Glucagon is secreted by– **α cells of islet of Langerhans**	**BVP-2005 / Haryana PMT-2004, Manipal -2003**
Insulin is secreted by– **β cell of islets of Langerhans in pancreas**	**BVP-2001 / DUMET -2001**
Which causes an increase in sodium reabsorption in the distal convoluted tubule– **Increase in aldosterone levels**	**AIPMT-2014**
Deoxyribonuclease and ribonuclease are secreted by– **Pancreas**	**JIPMER-2005**
The one affects liver, that muscle and adipose tissue– **Insulin**	**JIPMER-2005**
Which represents that the action of insulin is– **Decreases blood glucose level by forming glycogen**	**AIIMS-2017, 2016 / NEET (Karnataka)-2013**
Catecholamine in a normal person induces– **Alertness**	**AIIMS-2012**
Adrenocorticoids are released from– **Adrenal cortex**	**AIIMS-26.05.2018 Shift-I**
Hormone secreted by α-cells of pancreas is– **Glucagon**	**AIIMS-26.05.2018 Shift-II / AIIMS-2017**
Insulin is a– **Hormone**	**AIPMT-1990**
In renal tubules aldosterone increases– **Absorption of Na^+, H_2O and elimination of K^+, PO_4^{--}**	**AP EAMCET-2016**
Total number of cells are found in islets of Langerhans is– **4**	**CG PMT-2005, 2004**
Adrenal gland is derived from– **Ectoderm, Mesoderm**	**WB JEE-2007**
Diabetes mellitus takes place only when– **β-cells of pancreas are in hyposecretory state**	**DUMET-2004**
The endocrine organs that is involved in fighting emergency situations by their active secretion is– **Adrenal medulla**	**MP PMT-2013**
Aldosterone is secreted by– **Zona glomerulosa**	**Manipal-2005**

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Hormone produced against allergic reaction is– **Glucocorticoid**	**AP EAPCET-07.09.2021 Shift-I**
The hormone that suppresses the immune responses is– **Cortisol**	**TS EAMCET-28.09.2020 Shift-II**
Life saving hormone is secreted by which gland – **Adrenal gland**	**CG PMT-2004**
Diabetes is due to– **Hormonal deficiency**	**Haryana PMT-2000**
The macromineral essential for the formation of insulin is– **Sulphur**	**AP EAMCET-2008**
The inhibitory hormone of GH is– **Somatostatin**	**GUJCET-2015**
The hormones of "Fright, Fight and Flight" are– **Adrenaline and Nor-adrenaline**	
The hormones that also produces anti-inflammatory reactions in man and suppresses the immune response in addition to its primary functions is– **Cortisol**	**Karnataka CET-2014**
The pairs of organs that includes only the endocrine glands is– **Parathyroid and adrenal**	**AIPMT-2008**
Norepinephrine is released by ..... and it increases the– **Sympathetic fibres, Heart rate**	**NEET (Karnataka)-2013**
Insulin differs from growth hormone because it affects– **Metabolism of fats by inducing lipogenesis**	**AIPMT-1999**
The inability to regulate the concentration of sodium ions in the blood, could be due to the improper functioning of – **Adrenal cortex : It produces aldosterone**	**AP EAMCET-2010**
Testes and Ovary	
Secretion of androgens by testes is regulated by– **ICSH (Interstitial cell stimulating hormone)**	**WB JEE-2006**
Presence of the hormone in the urine that confirms pregnancy– **Human chorionic gonadotropin**	**WB JEE-2012**
The female hormone inhibin is secreted by– **Corpus luteum**	**AFMC -2011, AMU-2011**
……. induces parturition. **Oxytocin**	**DUMET-2010, UP CPMT-2001, AMU-2007**
Androgens are secreted by– **Testis**	**JIPMER-1999**
The ovary in mammals that acts as an endocrine gland after ovulation– **Graafian follicle**	**Rajasthan PMT-2010**
Estrogen is secreted by– **Graafian follicle**	**AMU -2000**
Progesterone is secreted by– **Corpus luteum**	**UP CPMT-2001 / Haryana PMT-2003, JECECE-2004**
Sertoli cells are involved in– **Nutrition of sperms**	**AMU-2007**
The Leydig cells found in the human body are the secretory source of– **Androgens**	**JCECE-2018**
Normal functioning of sex glands is regulated by– **Tocopherol**	**AMU-1997**
Cumulus proligerus cells are found around– **Ovum**	**AMU-1997**
The immediate cause of induction of ovulation in female is the large plasma surge of– **LH (Luteinizing Hormone)**	**AMU-2009, AIPMT-1994**
Deficiency of the hormones that leads to infertility in male and female human beings – **FSH (Follicle Stimulating Hormone)**	**MHT CET-06.10.2020 Shift-I**
Estrogen and testosterone are steroid hormones, and are most likely bind to– **Cytoplasmic receptors**	**DUMET-2009**
Prostate gland is a– **Semen secreting accessory gland of male**	**J&K CET-2007**
Repair of endometrium is undertaken by– **Estrogen**	**AMU-1996**
In oocyte secondary maturation occurs in– **Fallopian tube**	**AMU-1996**
Secretion of estrogen is promoted by– **FSH**	**CMC Ludhiana-2015**
Gonadotropin hormone is– **FSH and LH**	**BCECE-2008**

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Female hormone is–	**Progesterone, Estrogen, Estradiol**	**BCECE-2002**
FSH is–	**Glycoprotein**	**Haryana PMT-2011**
Eunuchoidism is due to the failure of production of–	**Testosterone**	**AMU-2003**
Accessory sexual character in female is promoted by–	**Estrogen**	**VMMC-2014 / JIPMER-2008, CG PMT-2004**
Due to deficiency of which hormone, bones become weak in female–	**Estrogen**	**GUJCET-2011**
The glans penis is a derivative of–	**Corpus spongiosum**	**MHT CET-01.10.2020 Shift-I**
The hormone that levels will cause release of ovum (ovulation) from the graafian follicle–	**High concentration of Estrogen**	**NEET-2020 Phase-I**
The shared terminal duct of the reproductive and urinary system in the human male is–	**Urethra**	**AIPMT-2014**
The main function of mammalian corpus luteum is to produce–	**Progesterone**	**AIPMT-2014 / CMC Vellore-2010, Uttarakhand PMT-2009 / DUMET-2007, Rajasthan PMT-2006, 1999**
Occurrence of Leydig's cells and their secretion is–	**Testis and testosterone**	**Tripura JEE-2019 / TS EAMCET-02.05.2018 Shift-I, KVPY SB & SX-2014 / DUMET-2007, J&K CET-2007 /AIPMT-1993, 1991, DUMET-2008 / Uttrakhand PMT-2008, Manipal-2008, 2002 / DUMET-2003, BVP-2007, 2011, 2012 / MGIMS Wardha-2006, AP EMACET-1998 / JIPMER-1996**
The hormone that stimulates the secretion of milk from female–	**Prolactin**	**AIPMT-1996 / UP CPMT-2001**
..... is a precursor molecule of testosterone.	**Cholesterol**	**MHT CET-2019**
The formation of egg and sperm is affected by–	**FSH**	**DUMET-2005**
Secretion of progesterone by corpus luteum is initiated by–	**LH**	**J&K CET-2013**
Relaxin hormone in mammals is secreted by–	**Placenta**	**KVPY SA-2016 / Haryana PMT-2001**
Sertoli cells are nourishing cells in the testis. They also secrete a hormone which is named as–	**Inhibin**	**Karnataka CET-2005**
The hormones that is a derivative of fatty acid–	**Prostaglandins**	**WB JEE-2014**
In males, the essential hormone for secondary sexual characteristics is–	**Testosterone**	**CG PMT-2004**
Corpus luteum is developed from–	**Graafian follicle**	**VMMC-2004**
In most mammal, the testes are located in scrotal sac for–	**Spermatogenesis**	**VMMC-2004**
When both ovaries are removed from rat the hormone that is decreased in blood–	**Estrogen**	**Rajasthan PMT-2007 / AIPMT-2002**
Compared to a bull to a bullock is docile because of–	**Lower levels of blood testosterone**	**AIPMT-2007**
A boy after attaining sexual maturity shows muscular growth, growth of facial and axillary hair, aggressiveness and low pitch of voice. These changes are attributed to_____ hormone–	**Testosterone**	**Karnataka CET-2019**
The gland that secretes odorous secretion in mammals–	**Anal gland**	**AIPMT-2000**
The substance that can be used as male contraceptive in future–	**Testosterone**	**AIPMT-1999**
Synthesis of testosterone by Leydig cells is stimulated by–	**ICSH**	**Karnataka CET-2004**
In rabbit, head of epididymis present at the head of the testis is called–	**Caput epididymis**	**VMMC-2012 / UP CPMT-2008**

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Hormones of heart, kidney and gastrointestinal tract	
Atrial Natriuretic Factor (ANF) acts as a– **Check on Renin-Angiotensin mechanism**	**Karnataka CET-20.05.2023**
Erythropoietin hormone is produced by– **Kidney**	**AP EAPCET-23.05.2023, Shift-I**
Name of the hormone that stimulates the secretion of gastric juice– **Gastrin**	**WB JEE-2010**
Crypts of Lieberkuhn are involved in– **Secretion of succus entericus**	**Rajasthan PMT-2009**
Protein hormone is a– **Insulin**	**Tripura JEE-2018**
The endocrine nature of kidney is indicated by secretion of– **Calcitriol**	**MHT CET 5.10.2020 Shift-I**
Secretin and cholecystokinin are digestive hormones. They are secreted in– **Duodenum**	**AFMC -2009**
Atrial natriuretic hormone is produced by– **Heart**	**AMU-2005 / Manipal-2004 / Uttarakhand PMT-2004**
The hormone that makes the gallbladder contract is– **Cholecystokinin**	**MGIMS Wardha-2008 / Haryana PMT-2003, JIPMER-1998**
This gastrointestinal hormone stimulates insulin secretion– **GIP**	**AMU-2010**
The hormone secretin is produced by– **Small intestine and stimulate pancreas**	**AMU-2008 / VMMC-2008**
Secretin hormone is secreted from– **Duodenum and stimulates pancreas**	**J&K CET-2006 / BVP-2012 / Haryana PMT-2003**
Cholecystokinin is– **Gastro-intestinal hormone**	**J&K CET-2006**
The hormones that cause inhibition of gastric secretions and promotion of pancreatic, bile secretions is– **Enterogastrone, pancreozymin and cholecystokinin**	**VMMC-2015**
The hormones that induce secretion of succus entericus is– **Secretin and cholecystokinin**	**Rajasthan PMT-2000**
Pancreas secretes pancreatic juice on stimulation by– **Secretin**	**BCECE-2007**
Succus entericus is referred to as– **Intestinal juice**	**NEET-2021**
The erythropoietin hormone that stimulates R.B.C. formation is produced by– **Juxtaglomerular cells of the kidney**	**NEET-2021**
Duodenum has characteristic Brunner's gland that secretes two hormones called– **Secretin, cholecystokinin**	**AIIMS-2009**
The one affects liver, that muscle and adipose tissue is– **Insulin**	**AP EAMCET-2005**
The hormone stimulates that the gastric secretion is– **Gastrin**	**UP CPMT-2005 / JIPMER-2014, AMU-2006 / MGIMS Wardha-2005**
Deficiency of secretion from the β-cells of islets of Langerhans result in– **Hyperglycemia, Diuresis, Protein stored in tissue is decreased**	**UP CPMT-2014**
Hormone glucagon, responsible for conversion of glycogen into glucose is secreted by– **α-cells of islets of Langerhans**	**WB JEE-2015 / UP CPMT-2014**
The juice containing sodium glycocholate released under the influence of – **Cholecystokinin**	**AP EAMCET-2006**
A hormone secreted by the endocrinal cells of duodenal mucosa that influences the release of pancreatic juice is– **Cholecystokinin**	**AP EAMCET-2009**
Mechanism of hormone Action	
The name second messenger is given to– **Cyclic-AMP**	**CG PMT-2007**
Steroid is a– **Cholesterol**	**CG PMT-2007 / BCECE-2004**
The feedback control mechanism is related with– **Hormonal secretion**	**CG PMT-2007**
Inhibitory neurotransmitter is– **GABA**	**JCECE-2015**
The glucose transporters that is insulin-dependent– **GLUT IV**	**NEET-2019**

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01.

SEXUAL REPRODUCTION IN FLOWERING PLANTS

1.1 Flower – A Fascinating Organ of Angiosperms

- Occurrence of triploid (3n) primary endosperm nucleus is a characteristic feature of– **Angiosperms**
- Nonessential floral organs in a flower are– **Sepals and petals**
- The proximal end of the filament of a stamen is attached to the– **Thalamus and Petal of the flower**
- A typical angiosperm anther is– **Bilobed**
- Theca of anther separated by– **A longitudinal groove**
- An anther is consisting of– **Four microsporangia**
- Flowers are– **Embryological marvels, Morphological marvels**
- In angiosperms, the site of sexual reproduction is– **Flower**
- Flower is a highly modified and condensed reproductive shoot specially meant for– **Sexual reproduction**
- Male and female reproductive structures of the angiosperms are– **Androecium and gynoecium respectively**
- Science of cultivation, breeding, marketing, and arrangement of flowers is called– **Floriculture**

1.2 Pre-fertilization : Structures and Events

- Winged pollen grains are present in– **Pinus**
- Attractants and rewards are required for– **Entomophily**
- In water hyacinth and water lily, pollination takes place by– **Insects or wind**
- Perisperm differs from endosperm in– **Being a diploid tissue**
- The ovule of an angiosperm is technically equivalent to– **Megasporangium**
- Most common type of embryo sac in angiosperms is– **Monosporic with three sequential mitotic divisions**
- In a flower, if the megaspore mother cell forms megaspores without undergoing meiosis and if one of the megaspores develops into an embryo sac, its nuclei would be– **Diploid**
- Preserving pollen as fossils has proved helpful in– **Sporopollenin**
- Poloidy of endothecium, microspore mother cell, tapetum and microspore is respectively– **2n, 2n, 2n, n**
- Both, autogamy and geitonogamy are prevented in– **Papaya**
- Pollen tablets are available in the market for– **Supplementing food**
- ..... many haploid nuclei are present in a mature pollen grain– **Two**
- Among the terms listed below, those that are not technically correct names for a floral whorl are– **Carpel, Sepal**
- The stamens represent– **Microsporophylls**
- Anther is generally– **Tetrasporangiate**
- The anther wall consists of four wall layers where middle layer lie between– **Endothecium and tapetum**
- Transportation of nutrients to inner side of anther correct function of– **Tapetum.**
- ..... of the pollen grain divides to form two male gamete^ **Generative cell**
- Cells that found in a pollen grain when it is shed at 3-celled stage are– **1 vegetative cell, 2 male gametes**
- In a fully developed male gametophyte of flowering plants the number of nuclei is– **Three**
- Mature ovules are classified on the basis of funiculus. If micropyle lie close to the funiculus, the ovule is termed as– **Anatropous**
- The function of filiform apparatus in an angiospermic embryo sac is– **It guides the pollen tube into a synergid**
- The condition that makes flowers invariably autogamous is– **Cleistogamy**
- Feathery stigma occurs in– **Wheat**
- Spiny or sticky pollen grains and large, attractively coloured flowers are associated with– **Insect pollination**
- Fragrant flowers with well developed nectaries are an adaptation for– **Insect pollination**
- Small, producing large number of non-sticky pollen grains are flower– **Wind pollination**
- Flowering plants have developed certain outbreeding devices to discourage self-pollination and encourage cross-pollination. Which one of these is not an example of such outbreeding devices– **Cleistogamy**

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- Male and female flowers are present on different plants (dioecious) to ensure xenogamy, in– **Papaya**
- The female gametophyte of a typical dicot at the time of fertilisation is– **7-celled**
- Typical embryo sac is– **8-nucleate, 7-celled**
- In angiosperms, various stages of reductional division can best be studied in– **Young anthers**
- Tapetum is found in– **Anther**
- The first cell of male gametophyte in flowering plant– **Microspore**
- The pollen tube usually enters the embryo sac through– **One of the two synergids**
- Dioecious plant bearing only male or female flowers– **Autogamy and Geitonogamy**
- The portion of the embryonal axis above the level of attachement of scutellum is– **Epicotyl**
- Persistent nucellus is called as perisperm and is found in _____ **Black pepper**
- The innermost layer of anther is tapetum, the function is– **Nutrition**
- _____ microspore mother cell will give rise to 256 microspores after reduction division– **64**
- Advantage of cleistogamy is– **No dependence on pollinators**
- structure of ovule takes part in storage of food– **Nucellus**
- Non endospermic seeds present in– **Pea**
- Pericarp develops from– **Ovary wall**
- The endosperms found in angiospermic seed is different from that of gymnosperm in the sense that, in the former– **It is formed after fertilisation while in the later it is formed before fertilisation**
- Generally _____ megaspores take part in the development of female gametophyte of angiosperms– **One**
- In angiosperms, triple fusion is necessary for the formation of– **Endosperm**
- _____ is without exception in angiosperms– **Double Fertilisation**
- The endosperm in angiosperms is formed– **After fertilisation**
- In angiosperms, free nuclear division occurs during– **Endosperm formation**
- Polar nuclei are situated in the central cell– **Below the egg apparatus**
- Proteinaceous endosperm of maize is called– **Aleurone layer**
- Dicot embryo consists of– **Radicle, plumule, cotyledons and sometimes endosperm**
- If the number of chromosome in endosperm of a dicot plant is 36, the root cell will contain– **24 chromosomes**
- In angiosperm endosperms is formed by– **Division of fused polar nuclei and male gametes**
- Aleurone layer in maize is present towards– **Periphery of coleoptiles**
- In a seed of maize, scutellum is considered as cotyledon because is– **Absorbs food materials and supplies them to the embryo**
- Function of embryonal suspensor in angiosperms is to– **Push embryo deeper into endosperm**
- In plants, in nature, autogamy is avoided since the seeds produced– **Are fewer in number, Do not germinate successfully**
- Each cell of the ___ of angiospermic microsporangia is capable of giving rise to a microspore tetrad– **Sporogenous tissue**
- Transfer of pollens from anther to stigma within the same flower is called– **Self pollination**
- Egg apparatus of angiosperm consists of– **One egg cell and two synergids**
- Stalk with _____ ovules remain attached to placenta. **Funicle**
- Continuous self pollination in a species develops– **Weak off springs**
- Perisperm is– **Remnant of nucellus**
- Generally number of integuments in the ovule of angiosperm and gymnosperm is– **Two and One**
- The functional megaspore undergoes 3 mitotic division to form – **Mature embryos sac**
- The microsporangia develop further and become– **Pollen sacs**
- A microsporangium is surrounded by _____ wall layers. **Four**
- The outer three layers of anther wall perform the function of– **Protection, Help in dehiscence**
- The diameter of pollen grains is– **25-50 micrometers**
- Endothecium layer of anther lobes is present– **Just inside of epidermis**
- Partially developed male gametophyte is – **The pollen grain**
- Germpore is the region where the exine is– **Absent**
- Middle layers of microsporangia are present between– **Epidermis and tapetum**
- One sporogenous cell produce …….. number of microspore tetrad– **4**
- Pollen grain is considered as– **Male gametophyte**
- A tapetum has– **Dense cytoplasm with more than 1 nucleus**
- When the anther is young, a group of compactly arranged homogenous cell called the– **Sporogenous tissue**
- Male gamete in angiosperms are formed by the division of– **Generative cell**
- Intine layer is made up of– **Cellulose and Pectin**
- In 60% angiosperm, pollen grains are shed at– **2 - celled stage**
- Embryo sac represents– **Female gametophyte**
- Plant can loose viability in 30 min is– **Rice and wheat**

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- Arising from placenta are the megasporangia commonly called– **Ovules**
- One ovule in an ovary is found in– **Wheat, Paddy, Mango**
- More than one ovule in an ovary is found in– **Papaya, Watermelon, Orchids**
- Point where ovules are attached to placenta is – **Funicle**
- Each ovule is covered by a protective covering called integuments which surround the nucellus. At the tip, the integuments are absent leaving a small opening called the– **Micropylar end**
- Food is reserve in– **Nucellus**
- The method of embryo sac forming from a single megaspore is called– **Monosporic development**
- 3 cells are grouped at micropylar end are– **Egg apparatus**
- Pollination gives genetically different types of pollen grains– **Xenogamy**
- Single ovule in each ovary is seen in type of agent of pollination is– **Wind**
- The proximal end of filament is attached to– **Thalamus**
- Water pollination commonly occur in– **Vallisneria and Hydrilla**
- In monocotyledons, most common pollination agent is– **Water**
- The theca of anthers are separated by– **Longitudinal groves**
- Moth deposit its egg in the part of Yucca plants– **In locule of ovary**
- In unisexual flowers, there is– **No need of emasculation**
- Syncytium is seen in– **Tapetal layer, Muscle cells, Liquid endosperm of coconut**
- ..... pollen mother cells should undergoes meiotic division to produce 64 pollen grains– **16**
- The mature male gametophyte in angiosperm is represented by– **Pollen grain**
- The type of division takes place when PMC forms microspores– **Meiotic division, Reductional division**
- ..... percentage of angiosperms the male gametophyte is shed at 3-celled stage – **40%**
- The egg apparatus of angiosperm comprises– **An egg cell and two synergids**
- Importance of MMC undergoing reductional division– **It is necessary to maintain the ploidy of gametes**
- Megasporangium along with its protective integument is called– **Ovule**
- The innermost wall layer of pollen sac is tapetum. Its function is to provide– **Nutrition**
- The point of attachment of funicle with the body of the ovule is– **Hilum**
- Genotypically, the pollen grains produced by an anther belong to– **Many types**
- In angiosperm, two non-motile male gametes are produced by– **Generative cell**
- Transfer of pollen grains from the anther to the stigma of another flower of same plant is called– **Geitonogamy**
- ..... nucleus of embryo sac are surrounded by cell wall– **6**
- Pollination occurring in closed flowers is– **Cleistogamy**
- Common pansy known as– **Viola**
- Chasmogamy refers to the condition where– **Flowers are open**
- In angiosperms, a mature male gametophyte is formed from a pollen mother cell through– **One meiotic and two mitotic divisions**
- Transfer of pollen from anthers to stigma in the same flowers- **Self-pollination**
- Insect pollinated flowers usually possess– **Sticky pollen and rough surface stigma**
- Animals act as pollinators– **Arboreal Rodents**
- In young anther, four rows of cells destined to form pollen are collectively called– **Tapetum**
- Chasmogamous and cleistogamous type of flower are found in– **Commelina**
- Hormone used in tissue culture for better growth is– **Auxin, Cytokinin**
- Species provides floral rewards in the form of providing safe place to lay eggs– **Amorphophallus, Fig, Yucca**
- Dioecious condition can present in– **Autogamy, Geitonogamy**
- Wind pollinated flowers usually possess– **Light coloured scented pollen covered with nectar**
- Tapetum present in the microsporangial wall occurs between– **Middle layers & sporogenous tissue**
- Haploid, diploid and triploid conditions respectively can be traced in– **Egg, nucellus, endosperm**
- Filiform apparatus is a characteristic feature of– **Synergid**
- In gymnosperms, the seeds are naked because they lack– **Pericarp**
- A non-nutritive structure is– **Integument**
- Function of germ pore– **Initiation of pollen tube**
- All the events from pollen deposition on the stigma until pollen tubes enter the ovules are together referred to as – **Pollen–pistil interaction**

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- In angiosperms, the number of meiotic divisions required to produce 100 microspores is– **25**
- Pollen grains are able to withstand extremes of temperature and desiccation because their exine is composed of– **Sporopollenin**
- If the leaf cell of an angiosperm has 16 chromosomes, what is the chromosome count in microspore of the same plant– **8**

1.3 Double Fertilization

- During the process of fertilisation, the pollen tube usually enters the embryo sac through– **Micropyle**
- Fusion of one of the male gametes with an egg nucleus is referred to as– **Generative fertilisation, Syngamy**
- The PEN (primary endosperm nucleus) develops into endosperm this event takes place– **After double fertilisation.**
- Triple fusion in angiosperms is fusion of male gamete with– **Secondary nucleus**
- The pairs that in angiosperms are diploid and triploid respectively– **Secondary nucleus and endosperm**
- ____ are the cell of the pollen grain divides to form two male gametes– **Generative cells**
- _____ both are haploid structures– **Egg cells and antipodal cells**
- The fusion of male and female gametes is called – **Syngamy**
- _____ cells of nucellus in ovule make the embryo directly– **Apomictic**
- Reduction division in angiosperm occurs at the time of– **Microspore and megaspore formation**
- Double fertilization is a characteristic of– **Angiosperm**
- Fusion of two dissimilar gametes is called– **Fertilisation**
- _____ event in a botanical garden is never directly influenced by light– **Fertilisation**
- Filiform apparatus– **Cellular thickness of the synergids**
- In an embryo sac of a typical angiosperm, there are– **Egg, synergids, polar nuclei and antipodals**
- Meiosis can be observed in– **Spore mother cell**
- Pollen grains are formed in– **Pollen sac**
- Synergids are– **Haploid**
- Total number of nuclei involved in double fertilization in angiosperm are– **Five**
- The fusion product of polar nuclei and male gamete is– **Primary endosperm nucleus**
- Fusion of one of the male gametes with secondary nucleus and the other male gamete with egg cell- **Double fertilization means**
- Polar nuclei are located in– **Embryo sac**
- Double fertilization is essential for formation of– **Endosperm**
- In double fertilization, male gamete and secondary nucleus form– **Endosperm**

1.4 Post-Fertilization - Structures and Events

- The plant parts which consist of two generations-one within the other– **Pollen grains inside the anther, Embryo sac inside the ovule**
- The cells of endosperm of angiosperm have 24 chromosomes. What will be the number of chromosomes in the gametes– **8**
- In angiosperms, normally after fertilisation the primary endosperm nucleus divides earlier than– **The zygote**
- True embryo develops as a result of fusion of– **An egg cell and a male gamete**
- The portion of embryonal axis between plumule (future shoot) and cotyledons is called– **Epicotyl**
- Endosperm is completely consumed by the developing embryo in– **Pea and groundnut**
- Endospermic seeds are found in– **Castor, Barley, Maize**
- In albuminous seeds, food is stored in ..... and in non-albuminous seeds, it is stored in ..... **Endosperm, cotyledons**
- Persistent nucellus is called ..... and is found in ..... **Perisperm, black pepper**
- This is an example of a very old viable seed excavated from Arctic Tundra. The seed germinated and flowered after an estimated record of 10,000 years of dormancy it is– ***Lupinus arcticus***
- Progeny produced as a result of cross pollination– **Show high degree of variability and is evolutionary important**
- In ..... endosperm is completely consumed during seed maturation– **Pea**
- Endosperm is persistent in ..... during seed germination– **Castor**
- Embryo development takes place at– **Micropylar end**
- Coleorhiza is present at– **Radical end enclosed the undifferential sheath**
- Coleoptile is present at– **Shoot apex & few leaf primordial enclosed in hollow foliar structure**
- Examples of albuminous seed– **Wheat, Maize, Barley, Castor**
- Perisperm are found in– **Black pepper, Beet**
- Example of false fruit includes– **Apple, Strawberry**

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- The covering of the strawberry called– **Achene**
- Food material in ex-albuminous seed is mainly stored in– **Cotyledons**
- A typical embryo sac possesses– **Egg, synergids, polar nuclei and antipodals**
- A true fruit is the one where– **Only ovary of the flower develops into fruit**
- A typical dicotyledonous embryo consists of– **Embryonal axis and cotyledons**
- Testa of a seed is produced from– **Outer integument of ovule**
- Free nuclear division in an angiosperm takes place during– **Endosperm formation**
- Post-fertilization event in flowering plants is– **Embryo development**
- Floral parts forms pericarp after fertilization– **Ovary wall**
- Below embryonal axis ..... is present and above the axis ..... is present respectively– **Hypocotyl and epicotyl**
- Endosperm is completely consumed by the developing embryo in– **Pea, Bean & Groundnut**
- If an endosperm cell of an angiosperm contains 24 chromosomes, the number of chromosomes in each cell of the root will be– **16**

1.5 Apomixis and Polyembryony

- The phenomenon observed in some plants where in parts of the sexual apparatus is used for forming embryos without fertilisation is called– **Apomixis**
- Polyembryony commonly occurs in– **Citrus**
- "Apomixis" in plants mean, development of a plant– **Without gametic fusion**
- The oldest seed that is discovered at king Herod's palace– ***Phoenix dactylifera***
- Example of apomixis is– **Asteraceae**
- Production of fruit without fertilization is called– **Parthenocarpy**
- Polyembryony commonly occurs in– **Citrus**
- Apomixis is seen in– **Asteraceae, Grasses**
- Adventive polyembryony in citrus is due to– **Nucellus**
- Apomictis embryos in citrus arise from– **Maternal sporophytic tissue in ovule**

1.6 Miscellaneous

- Liquid endosperm in coconut is resulted due to– **Karyokinesis is not followed by cytokinesis**
- In _____ plants, the nucellar cells start dividing and develop into the embryos– **Citrus and mango**
- In _____ plants an ovary contains one ovule– **Wheat, Paddy, Mango**
- A naturally occurring parthenocarpic fruit is– **Banana**
- Fig is pollinated by– **Insects**
- In _____ flowers, stigma is rough and sticky– **Wind pollinated**
- Embryo sac is to ovule as ..... is to an anther– **Pollen grain**
- In a typical complete, bisexual and hypogynous flower the arrangement of floral whorls on the thalamus from the outermost to the innermost is– **Calyx, corolla, androecium and gynoecium**
- A dicotyledonous plant bears flowers, but never produces fruits and seeds. The most probable cause for the above situation is– **Plant is dioecious and bears only staminate flowers**
- The outermost and innermost wall layers of microsporangium in an anther are respectively– **Epidermis and tapetum**
- During microsporogenesis, meiosis occurs in– **Microspore mother cells**
- From among the sets of terms given below, identify those that are associated with the gynoecium– **Stigma, ovule, embryo sac, placenta**
- Starting from the innermost part, the correct sequence of parts in an ovule are– **Egg, embryo sac, nucellus, integument**
- Autogamy can occur in a chasmogamous flower if– **Both pollen and ovules mature simultaneously**
- In an embryo sac, the cells that degenerate after fertilization are– **Synergids and antipodals**
- In the embryos of a typical dicot and a grass, true homologous structures are– **Cotyledons and scutellum**
- The phenomenon wherein, the ovary develops into a fruit without fertilization is called– **Parthenocarpy**
- The term used for transfer of pollen grains from anthers of one plant to stigma of different plant which, during pollination, brings genetically different types of pollen grains to stigma, is– **Xenogamy**
- In some members of which of the following pairs of families, pollen grains retain their viability for months after release– **Rosaceae ; Leguminosae**
- In water hyacinth and water lily, pollination takes place by– **Insects or wind**
- In some plants thalamus contributes to fruit formation. Such fruits are termed as– **False fruits**
- The fate of the male gametes discharged in the synergid is– **One fuses with the egg and other fuses with central cell nuclei**
- Helpful in preserving pollen as fossils has proved– **Sporopollenin**
- Pollen grains can be stored for several years in liquid nitrogen having a temperature of– **-196^0C**
- Double fertilization is– **Syngamy & triple fusion**

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EXAM POINT

A flower-Fascinating organ of Angiosperms	
Radially expanded cells with fibrous thickenings has– **Endothecium**	**AP EAPCET-11.05.2023, Shift-I**
In the homeostatic control of blood sugar level, the organs that function respectively as modulator and effector are– **Hypothalamus and islets of Langerhans**	**AIIMS-2015 /Karnataka CET-2006**
Diadelphous stamens are found in– **Pea**	**NEET-2021**
Unisexual flowers are present in– **Pumpkin, Papaya and Cucumber**	**AIPMT (Re-Exam)-2015**
Anthesis is a phenomenon which refers to– **Opening of flower bud**	**AMU-2015 / CMC Ludhiana-2009, Haryana PMT-2002**
If a sporangium develops from a single cell, the development of sporangium is known as– **Leptosporangiate**	**AMU-1996**
Microsporangium and pollen Grain	
The function that of tassels in the corn cob is– **To disperse pollen grains**	**NEET (UG) 07.05.2023**
An organic substance that can stand with environmental extremes and cannot be degraded by any other enzyme is– **Sporopollenin**	**AIPMT (Screening)-2012**
Large nucleus in a pollen grain is– **Tube nucleus**	**UP CPMT-2006**
Fibrous thickenings of hygroscopic nature are found in this part of the anther wall is– **Endothecium**	**AP EAMCET-2005**
Resistant to enzyme action is– **Pollen exine**	**AIPMT-2008**
The callose wall encloses– **Microspore mother cell**	**AIPMT-2007**
Male gametes in angiosperms are formed by the division of– **Generative cell**	**AIPMT-2007**
Rarely among angiosperms, the pollen grains influenced the endosperm. This is called as– **Xenia**	**JIPMER-2014**
The cells during gametogenesis that is normally diploid– **Spermatogonia**	**AIPMT-2015**
Male gametophyte in angiosperms produces– **Two sperms and one vegetative cell**	**AIPMT (Re-Exam)-2015**
Function of filiform apparatus is to– **Guide the entry of pollen tube**	**AIPMT-2014**
The function of germ pore is – **Initiation of pollen tube**	**AIPMT (Mains)-2012 J&K CET 2015**
In an angiosperm, total number of microspore mother cells are required to produce 100 pollen grains– **25 MMC**	**AIPMT-1995**
Even after killing the generative cell with a laser beam, the pollen grain of a flowering plant germinates and produces normal pollen tube because– **The vegetative cell has not been damaged**	**Manipal-2015 / AIIMS-2008 / JPMER-1998**
The viability of pollen grains of rice and wheat is– **30 minutes**	**AIIMS-2013**
Xenia and metaxenia terms are related with– **Pollen and endosperm**	**AMU-2006 / AIIMS-2002**
Ubisch bodies are produced from– **Tapetum**	**AP EAMCET-24.09.2020 Shift-I**
Epipetalous and syngenesious stamen occurs in– **Asteraceae**	**AP EAMCET-24.09.2020 Shift-I**

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The most resistant known biological material is– **Sporopollenin**	**JIPMER-2019 / UP CPMT-2009,2012, VMMC-2012 / Karnataka CET-2010, CMC Vellore-2009 /Uttarakhand PMT-2007, JIPMER-2004 / Punjab MET-2009, 2003, JIPMER-2003, 2001**
If you want to develop hybrid seeds within a bisexual flower, the part that needs to be removed from the same flower– **Anther**	**WB JEE-2012**
Exine of pollen grain is made up of– **Sporopollenin**	**Haryana PMT-2011 / MHT CET-2018, WB JEE-2010 / WBJEE-2008**
Total number of microsporangia are found in a monothecous anther– **Two**	**Manipal-2011**
Haploid plants can be produced by– **Anther or Pollen culture**	**VMMC-2014 / BVP-2002 / Karnataka CET-2002**
The wall layers of anther plays that a predominant role in its dehiscence– **Endothecium**	**DUMET-2010 / MHT CET-2017**
At the time of shedding, the number of nuclei present in an angiosperm pollen grain can be– **Either two or three**	**DUMET-2010**
Represents the male gamete is– **Pollen grain**	**UP CPMT-2012**
Fillform apparatus is found in– **Synergids**	**AFMC-2002**
Germination of pollen grain on the stigma is– **In vivo germination**	**BVP-2003 / AMU-2004 / HP CET-2011**
In the anther wall– **middle layer is the between endothecium and tapetum**	**HP CET-2011 / BCECE-2006, VMMC-2005 / AMU-2004 / BVP-2003**
The part of flowering plant contains sporogenous tissue is– **Young anther**	**J&K CET-2014**
Developing pollen is nourished by- **Tapetum**	**J&K CET-2014 / J&K CET-2006 / JIPMER-1997**
Generally archesporium in an ovule is– **single celled and hypodermal in origin**	**CG PMT-2007 / CPMT-1980**
Number of androcytes required to form 32 male gametes in the plant with dicyclic dictyostele belonging to Polypodiaceae is- **32**	**AP EAMCET-2003**
The aleurone layer of rice grain is rich in– **Protein**	**AP EAMCET-2004**
Pollen grain wings of pinus are out growths of– **Exine**	**Haryana PMT-2002**
A microspore mother cell forms– **Pollen grains**	**JIPMER-2000 / AMU-1997**
In Clerodendron the self-pollination is prevented by– **Protandry**	**AP EAMCET-2001**
Three successive free nuclear mitotic divisions are involved in the development of female gametophyte in– **Angiosperms**	**MHT CET-07.10.2020 Shift-I**
The growth of pollen tube towards embryo sac is– **Chemotaxis**	**MGIMS Wardha-2009**
Fibrous thickenings of hygroscope nature are found in this part of the another wall– **Endothecium**	**VMMC-2010**
The number of pollen grains produced by head inflorescence of Asteraceae (Compositae) having 10 flowers. If each anther produces 20 pollen grains are– **1,000**	**CMC Vellore-2007**

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The first sporophyte arising from pollen grain was made by Guha and Maheshwari (1966) in– **Datura**	**CG PMT-2010 /Haryana PMT-1999**
Diadelphous condition is found in– **Papilionaceae (Fabaceae)**	**CMC Ludhiana-2012**
Pollen kit material is secreted by– **Tapetum**	**AMU-2003**
In a flowering plant, archesporium gives rise to– **Both, wall and sporogenous cells**	**MGIMS Wardha-2010**
Megasporangium (ovule) and Embryo Sac	
In the ovules that develop either on the inner wall of the ovary or attached on the peripheral part is– **Parietal Placentation**	**AP EAPCET-23.05.2023, Shift-I**
Through the cell that of the embryo sac, does the pollen tube enter the embryo sac is– **Degenerated synergid**	**JIPMER-2007**
In the animal the dimorphic nucleus is found in– **Paramecium caudatum**	**AP EAMCET-2006**
Endosperm is formed during the double fertilization by– **Two polar nuclei with one male gamete**	**AIPMT-2000**
Eight nucleated embryosac can be– **Monosporic, bisporic, and tetra sporic**	**AIPMT-2000**
Megaspores are produced from the megaspore mother cells after– **Meiotic division**	**NEET (Karnataka)-2013**
Embryo of sunflower have – **Two cotyledons (baby leaves)**	**AIPMT-1998**
If root of a flowering plant has 24 chromosomes, then its gamete has total number of chromosomes is– **12**	**JIPMER-2009**
If the number of chromosomes in egg cell is 8, then the total number of chromosomes in endosperm is– **24**	**UP CPMT-2011**
The direction of micropyle in anatropous ovule is– **Downward**	**AIPMT-2002**
In general the egg apparatus of embryo sac in angiosperm consists of– **One egg cell, two synergids, three antipodal cells and two Polar nuclei**	**NEET (Re-Exam)-04.09.2022**
The body of the ovule is fused within the funicle at– **Hilum**	**NEET-2020 Phase-I, Haryana PMT-2002**
The wheat grain has an embryo with one large shield-shaped cotyledon known as– **Scutellum**	**AIPMT (Re-Exam)-2015**
Male gametophyte with least number of cell is present in– **Lilium**	**AIPMT-2014**
Bicarpellary ovary with obliquely placed septum is seen in– **Solanum**	**NEET (Odisha)-2019**
The most common type of embryo sac in angiosperms– **Monosporic with three sequential mitotic divisions**	**NEET (Odisha)-2019**
Megasporangium is equivalent to– **Ovule**	**NEET-2013**
Perisperm differs from endosperm in– **being a diploid tissue**	**NEET-2013**
Functional megaspore in an angiosperm develops into– **An Embryo sac**	**AMU-1997 / NEET-2017**
In Angiosperms pollen tube liberate their male gametes into the– **Synergid cells**	**AIPMT-2002**
Embryo sac is– **Female gametophyte**	**AIIMS-2011**
The normal type of embryo sac is 8-nucleated and– **7-celled**	**Karnataka CET-2022, TS EAMCET 08.05.2019 Shift-I, AIIMS-2011 / UP CPMT-2010 / Haryana PMT-2002**

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Double fertilization involves– **Fertilization of the egg and the central cell by two sperms brought by the same pollen tube**	**AIIMS-2005**
After double fertilization, a mature ovule has– **1 diploid (Zygote) and 1 triploid cell (primary endosperm cell)**	**AIIMS-2013**
The sequence of development during the formation of endosperm is– **Archesporium →Megaspore mother cell→ Megaspore → Embryo sac**	**AIIMS-2017**
Ploidy level of nucellus, endosperm, polar nuclei, megaspore mother cell, female gametophyte respectively is– **2n, 3n, n, 2n, n**	**AIIMS-26.05.2018 Shift-I**
The plant part that consists of two generations, one within the other,– **Embryo sac inside the ovule and pollen grains inside the anther**	**AIIMS-2003**
In angiosperms, triple fusion results in the formation of– **Primary endosperm nucleus**	**WB JEE-2006**
Nucellar polyembryons occurs in– **Citrus**	**Punjab MET-2009, RAJASTHAN PMT-2009**
Male gametophyte of angiosperms is reduced to– **Three cells**	**Punjab MET-2009 / Haryana PMT-2009**
During the formation of embryo sac, the functional megaspore undergoes– **Three mitotic divisions**	**Punjab MET-2009 / Rajasthan PMT-2009, UP CPMT-2009**
Embryo sac is also known as– **Megagametophyte or female gametophyte**	**Rajasthan PMT-2004 / Punjab MET-1999, AIPMT-1994**
The result of double fertilization is– **Nucellus**	**Rajasthan PMT-2004**
For the formation of tetrasporic embryosac, total number of megaspore mother cells are required– **1**	**JIPMER-2005 / BHU PMT-2003**
The ovule is inverted with body fused to funicle, micropyle lying close to hilum and facing the placenta, it is– **Anatropous**	**BVP-2010 / JCECE-2005 / Manipal-2000**
The type of placentation that is seen in sweet pea– **Marginal**	**JCECE-2009**
Orthotropus ovule belongs to– **Urtica, Polygonum, Peperomia**	**AMU-2005 / Manipal-2004**
Amphitropous (transversal) ovules are found in– **Lemna, Poppy, Ranunculus**	**BHU PMT (Mains)-2011**
If the chromosome number of leaf cell is 42 the chromosome number of root cell, microspore mother cell and embryo respectively will be– **42, 42, 42**	**BHU PMT-2001**
The egg apparatus of angiosperm comprises is– **An egg cell and two synergids**	**DUMET-2010, AFMC-2001**
Apogamy is– **Failure of fusion of gametes**	**Uttarakhand PMT-2004**
The fertilized secondary nucleus of the ovule, during double fertilization, establishes the– **Endosperm**	**JIPMER-1999**
The nucleus of megaspore divides mitotically to form two nuclei which move to opposite poles, and later form an embryo sac which is– **8 nucleate**	**J&K CET-2014**
The embryo sac of angiosperms contains– **3 celled egg apparatus, 3 antipodal cell and 2 polar nuclei**	**J&K CET-2014**
The ovule of angiosperm is technically known as– **Megasporangium**	**Karnataka CET-2022**
The most common type of embryo sac is– **Polygonum type**	**AMU -2000**
Oenothera type of female gametophyte is always– **4 nucleate and 4 celled**	**AMU -2000**

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The archesporium of ovule is– **Single celled hypodermal**	**BHU PMT(Mains)-2007, Haryana PMT-2002**
The tissue which attaches the ovules inside the ovary is– **Placenta**	**Haryana PMT-2002**
The hilum and micropyle lie side by side very close to each other in– **Anatropous ovule**	**Manipal-2015**
In the plants, a mature female Gametophyte that is derived from "Megaspore mother cell" by– **One meiotic division and three mitotic division**	**AP EAMCET-25.09.2020 Shift-II**
Mesogamy is the entry of pollen tube into the ovule through– **Integuments**	**AP EAMCET-25.09.2020 Shift-II**
Stalk with the ovules that remain attached to the placenta is called– **Funicle**	**Manipal-2010 / AMU-2009 / Punjab MET-2008**
Eight nucleate embryo sacs can be– **Monosporic, bisporic and tetrasporic**	**Haryana PMT-2010**
Micropyle helps in– **Allowing entry of pollen tube**	**J&K CET-2009 / JCECE-2004, Haryana PMT-2003**
Polar nuclei are located in– **Embryo sac**	**Haryana PMT-2003**
The role of synergids is explained in– **Embryology**	**AP EAMCET-1997**
Double fertilization is fusion of– **One male gamete with egg and other with secondary nucleus**	**AFMC-2006**
When the body of the ovule, embryo sac and micropyle lie at right angles to the funicle, the ovule will be identified as– **Hemi anatropous**	**VMMC-2015 / AMU-1996**
The chief source of nutrition of embryo inside the ovule is– **Endosperm**	**CG PMT-2010**
The haustorial behaviour where entire embryo sac grows beyond the ovule tissue occur in– **Santalum**	**CG PMT-2010**
Development of embryo from nucellar cell is common in many varieties of– **Citrus**	**Rajasthan PMT-2011**
In the fully organised Polygonum type of embryo sac, the ratio that of haploid, diploid and triploid nuclei is– **6:1:0**	**Manipal-2010**
The type of cell division that takes place in the functional megaspore initially in angiosperms is– **Homeotypic without cytokinesis**	**Manipal-2010**
The scutellum observed in a grain of wheat or maize is comparable to which part of the seed in other monocotyledons– **Cotyledon**	**MGIMS Wardha-2013**
Pollination and its kinds	
Transfer of pollen grains from anther to stigma of another flower of same plant is known as– **Geitonogamy**	**RE-NEET (UG)-06.06.2023 (Manipur)**
Large, colourful, fragrant flowers with nectar are seen in– **Insect pollinated plants**	**NEET (UG) 07.05.2023**
Wind pollinated flowers are – **Small, brightly coloured, producing large number of pollen grains**	**AIPMT (Screening)-2010**
In some plants, stigma and anther mature at different times because– **It facilitates cross pollination**	**Karnataka CET-2019**
The one advantage of cleistogamy is– **Seed dispersal is more efficient and wide spread**	**DUMET-200 /JIPMER-2015**
Both, autogamy and geitonogamy are prevented in– **Papaya**	**NEET (Odisha)-2019 / AIPMT (Screening)-2012**

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Wind pollination is common in– **Grasses**	**AIPMT (Screening)-2011**
Anemophily type of pollination is found in– **Coconut**	**AIPMT-2001** **Haryana PMT- 2007** **AFMC-2007**
Chiropterophily means– **Pollination by bats**	**Karnataka CET-2004**
Unisexuality of flowers prevents– **Autogamy, but not geitonogamy**	**JIPMER-2012,** **AIPMT-2008**
The type of association that is found in between entomophilous flower and pollinating agent is– **Mutualism**	**AIPMT-2002**
In water hyacinth and water lily, pollination takes place by– **Insects or wind**	**NEET-2020 Phase-I**
The term used for transfer of pollen grains from anthers of one plant to stigma of a different plant which, during pollination, brings genetically different types of pollen grains to stigma, is– **Xenogamy**	**NEET-2021**
The important floral that rewards to the animal pollinators is– **Nectar and pollen grains**	**AIPMT-2015**
Transmission tissue is characteristic feature of– **Solid style**	**AIPMT-2015**
The type of pollination that takes place in Vallisneria is– **Male flowers are carried by water currents to female flowers at surface of water (hydrophily)**	**NEET (Odisha)-2019**
A dioecious flowering plant prevents both– **Autogamy and Geitonogamy**	**NEET-2017**
Attractants and rewards are required for– **Entomophily**	**NEET-2017**
Plants with ovaries having only one or a few ovules, are generally pollinated by– **Wind**	**NEET-2017,** **AIPMT (Mains)-2012**
Pollination occurs in– **Angiosperms and gymnosperms**	
Pollination in Rafflesia is occurred by– **Bluebottle Carrion flies**	**AIIMS-2015**
Mesogamy is– **Entry of pollen tube through integuments**	**JCECE-2008 / UP CPMT-2004**
Xenogamy is essentially a type of– **Allogamy**	**WB JEE-2012**
Ornithophily refers to the pollination by– **Birds**	**WB JEE-2009**
Cross pollination in crop is called as– **Allogamy**	**BHU PMT-2002**
Zoophily is the pollination by– **Animals**	**UP CPMT-2010**
Pollination by insects is called– **Entomophily**	**BHU-PMT (Screening)-2008/Uttarakhand PMT-2007**
Generative cell was destroyed by laser but a normal pollen tube was still formed because– **Vegetative cell is not damaged**	**VMMC-2013**
Xenogamy is– **Pollination between two flowers of two different plant**	**VMMC-2013 / AMU-2012**
Corolla in passion flower helps the plant in achieving pollination by– **Insect**	**MHT CET 5.10.2020 Shift-I**
Sage flower is pollinated by– **Bees**	**AFMC -2011**
At the time of pollination, the pollen grain of Pinus takes place– **Four celled stages**	**BHU PMT (Mains)-2009**
Flower which is pollinated by wind is characterized by– **Small, non-scented, colourless flowers**	**BHU PMT (Mains)-2011**
Type of pollination of commelina is– **Cleistogamy**	**J&K CET-2008 / JIPMER-1999**

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The type of pollination involving transfer of pollen grains from anther to the stigma of the same flower is known as– **Autogamy**	**DUMET-2010**
The type of pollination found in Calotropis is– **Herkogamy**	**AMU-2005 / Uttarakhand PMT-2004 / Manipal-2004**
Gymnosperms have a mode of pollination celled– **Anemophily**	**Haryana PMT-2002**
Jaculators are present in– **Ruellia**	**Haryana PMT-2007**
The flower that shows the features of autogamy is– **Viola papillionacea**	**Manipal-2015**
Pollination by snail and slug is known as– **Malacophily**	**WBJEE-2015 / VMMC-2013, CMC Vellore-2008 / AMU-2006**
The type of placentation that do you find in Nymphaea– **Superficial**	**AP EAMCET-2001**
In nature, allogamy is met within– **Unisexual flowers only**	**AMU-1997**
On reaching the ovary, if pollen tube enters the ovule then through integuments, then it is called– **Mesogamy**	**MHT CET-06.10.2020 Shift-I**
Plants bearing small, inconspicuous flowers lacking fragrance, nectar and producing large number of smooth walled pollen grains, is characterstic of– **Anemophily**	**MHT CET-06.10.2020 Shift-I**
Malacophily is observed in the species of one of the– **Lemna**	**AP EAMCET-2000**
The transfer of pollen grains from the anther to the stigma of another flower of the same plant is called– **Geitonogamy**	**AIPMT-2014 / J&K CET-2012/Rajasthan PMT-2011, AMU-2010, 1997 / AIPMT (Screening)-2010, UP CPMT-2005 / AIPMT-1994**
The pollination in eel grass is– **Hydrophilous**	**Haryana PMT-2011**
Post-pollination : Structures and events	
The cocount water from tender coconut represents– **Free nuclear endosperm**	**NEET-2016 Phase-I**
The floral parts that forms pericarp after fertilization is– **Ovary wall**	**JIPMER-2012**
When pollen tube enters through micropyle, the process is called– **Porogamy**	**JIPMER-2012**
In coconut, the liquid endosperm is formed because– **It is not dependent upon karyokinesis and cytokinesis**	**JIPMER-2015**
The coconut water and the edible part of coconut are equivalent to– **Endosperm**	**AIPMT (Screening)-2012, BHU PMT (Screening)-2010, Rajasthan PMT-2006 / VMMC-2002**
Nucellus forms the part of that fruit is– **Perisperm**	**JIPMER-2009**
When a diploid female plant is crossed with a tetraploid male, the ploidy of endosperm cells in the resulting seed is– **Tetraploidy**	**AIPMT-2004**
Double fertilization is– **Syngamy and triple fusion**	**NEET-2018**
Advantage of cleistogamy is– **No dependence on pollinators**	**NEET-2013, DUMET-2009**
Double fertilization is exhibited by– **Angiosperms**	**NEET-2017**
The arrangement of the nuclei in a normal embryo sac in the dicot plants is– **3 + 2 + 3**	**AIPMT-2006**
Genes for cytoplasmic male sterility in plants are generally located in – **Mitochondrial genome**	**AIPMT-2005**

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Growth of pollen tube towards embryo sac is– **Chemotaxis**	**JIPMER-2008 / AIIMS-2000**
Syngamy means– **Fusion of gametes**	**AIPMT-1991**
Total number of meiotic divisions required for forming 100 zygotes/100 grains of wheat is **125**	**AIPMT-1988**
The role of double fertilisation in angiosperms is to produce– **Endosperm**	**AIPMT-1998, 1996**
After fertilization, the structure that develops from carpel– **Pericarp**	**AIIMS-2009**
If root of a plant has 24 chromosomes, then its gamete has total number of chromosomes is– **12**	**JCECE-2008**
Chalazogamy is shown by– **Casuarina**	**AMU-2015**
If the pollen tube enters the ovule through funiculus, the phenomenon is known as– **Mesogamy**	**Punjab MET-2003**
The movement of pollen tube is called– **Chemotropism**	**Manipal-2015 / UP CPMT-2003**
Cereals during germination derive their food from– **Aleurone grains**	**VMMC-2013**
Perisperm is– **Persistent nucellus**	**VMMC-2013 / AIPMT-1988,1989, AIIMS-1997 / CG PMT-2004**
The ovary after fertilization is converted into– **Fruit**	**J&K CET-2008**
In coffee seeds, perisperm is the source of coffee. This perisperm is a persistent– **Nucellus**	**JIPMER-1997**
The floral that parts forms pericarp after fertilization– **Ovary wall**	**BCECE-2014 / BHU PMT (Screening)-2009, Uttarakhand PMT-2009**
When pollen tube enters through micropyle, the process is called– **Porogamy**	**HP CET-2011 / BHU PMT (Screening)-2009, Uttarakhand PMT-2009 / J&K CET-2008, VMMC-2005 / Rajasthan PMT-2004, AMU-2004 / BCECE-2004 /JCECE-2004, BVP-2003 / Haryana PMT-2003 / AIPMT-1990**
The residual persistent nucellus in the seed of black pepper and beet is called– **Perisperm**	**NEET (Re-Exam)-04.09.2022, Kerala PMT-2015 / AMU-2010**
In general, pollen tube enters the ovule through– **Micropyle**	**J&K CET-2012**
Aleurone layer is found in– **Endosperm**	**MGIMS Wardha-2005**
A typical dicotyledonous embryo consists of– **Redicle, Embryonal axis and Cotyledons**	**AMU-2010**
If Ca of 2-celled proembryo divides longitudinally and the Ca and Cb both contribute to the development of embryo, this type of embryogeny would be called as– **Asterad type**	**AMU -2000**
If Ca of 2-celled proembryo divides transversely the embryogeny would be– **Solanad and chenopoldial type**	**AMU -2000, 1995**
By double fertilization, is formed– **Endosperm**	**CG PMT-2007 / Rajasthan PMT-2006**
Germination of pollen grain on the stigma is– **In vivo germination**	**VMMC-2015, 2005 / AMU-2004 / BVP-2003**

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The fertilization in which male gametes are carried through pollen tube is known as– **Siphonogamy**	**Uttarakhand PMT-2008 / BHU PMT-2004**
The number of chromosomes that in aleurone layer, if 10 number of chromosomes are found in megaspore mother cell– **15**	**VMMC-2010**
Seed and Parthenocarpic fruit	
The plant seed with perisperm is– **Sugar Beet**	**AP EAMCET-11.07.2022 Shift-II**
Testa and Tegmen of the seed coat represent– **Dried Integuments**	**Karnataka CET-2019**
Development of an embryo without fertilization is called as– **Parthenogenesis**	**NEET-2019 / JIPMER-2019, 2012, BHU PMT (Screening)-2009 / Uttarakhan PMT-2009, AIPMT-1989**
Endosperm is consumed by developing embryo in the seed of– **Pea**	**AIPMT-2008**
Mention the ploidy of parthenogenetic embryo, parthenocarpic fruit and apomictic seeds in series– **2n, n, 2n**	**AP EAMCET-25.04.2018 Shift-II**
The hilum is a scar on the– **Seed, where funicle was attached**	**AIPMT-2015**
The fruits that are parthenocarpic– **Banana, pineapple, grapes**	**AIPMT (Re-Exam)-2015**
Coconut water from a tender coconut is– **Free nuclear endosperm**	**AIPMT (Re-Exam)-2015**
Winged pollen grains are present in– **Pinus**	**NEET-2018**
Parthenocarpic tomato fruits can be produced by– **Treating the plants with low concentrations of gibberellic acid and auxins**	
Free nuclear division occurs during the formation of– **Endosperm**	**AIIMS-2001**
Micropyle of seed is involved in the passage of– **Water**	**AP EAMCET-24.09.2020 Shift-I**
Seed which are able to withstand reduction in moisture and temperature are called– **Orthodox seeds**	**BVP-2012, MGIMS Wardha-2007**
Parthenogenetic embryos in plants are those which are formed by– **Unfertilised eggs**	**MGIMS Wardha-2014**
The PGR6 induces that parthenocarpy in tomatoes is– **Auxin**	**AFMC -2009**
Aleurone grains are rich in– **Protein**	**BCECE-2006 / VMMC-2005, AMU-2008, 2004 / AIPMT-2003 / BVP-2003**
The parthenocarpy that makes no sense– **Pomegranate**	**Haryana PMT-2011 / JCECE-2005 /Manipal-2000**
When seed germinates, while the fruit is attached to parent plant, it is called– **Vivipary**	**Uttarakhand-2005**
Seed coat is derived from– **Integuments of ovule**	**J&K CET-2006 / Rajasthan PMT-2002**
Parthenogenesis is a term of– **Asexual reproduction**	**JIPMER-2013**
When an ovary develops into a fruit without fertilization it is called– **Parthenocarpy**	**MGIMS Wardha-2011**
Parachute mechanism of seed dispersal occurs in– **Calotropis**	**MHCET-2003 /DUMET-2001**
Edible part of paddy is– **Endosperm and embryo**	**VMMC-2010**
Arrhenotoky is related to– **Parthenogenesis**	**CMC Vellore-2010**

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Polyembryony and Apomixis	
Seed formation without fertilization in flowering plants involves the process of– **Apomixes**	**NEET-2016 Phase-I**
Apomixis embryos in citrus arise from– **Maternal sporophytic tissue in ovule**	**AIPMT (Screening)-2010**
Nucellar polyembryony occurs in– **Citrus**	**AP EAMCET-2011**
Amphimixis is– **Fusion of pronucleus of sperm with egg**	**UP CPMT-2006**
Name the plant shows adventives embryonic cells is– **Citrus and Mango**	**GUJCET-2015**
Lichen are well known combination of an alga and a fungus where fungus has– **A symbiotic relationship with the alga**	**AIPMT-2004, 1989**
In a type of apomixis known as adventive embryony, embryos develop directly from the– **Nucellus or integuments**	**JIPMER-2007 /AIPMT-2005**
Viruses are no more "alive" than isolated chromosomes because– **Both require the environment of a cell to replicate**	**AIPMT-2003**
Apomixis is– **Formation of seeds without syngamy and meiosis**	**AIIMS-25.05.2019 Shift-II / AIIMS-2007**
Prothallus (gametophyte) gives rise to fern plant (sporophyte) without fertilization. It is called– **Apogamy**	**CG PMT-2007 / JIPMER-1998 / AIPMT-1988**
The process that is helpful in hybrid seed production– **Apomixis**	**AIIMS-25.05.2019 Shift-II, BHU PMT (Mains)-2009**
The formation of gametophyte, from sporophyte, without spore formation or without meiosis is known as– **Apospory**	**VMMC-2014 / WB JEE-2006 / AIPMT-1988**
Embryo development from nucellus and integument is known as– **Adventive embryony**	**Manipal-2012 / Uttarakhand-2005**
The development of a sporophytes witout gametes and syngamy from vegetative cells of the gametophyte is called – **Apogamy**	**AMU-2005 / Manipal-2004**
Parthenogamy represents the– **Union of two gametes of one sex**	**BHU PMT (Mains)-2005**
Cleavage polyembryony occurs in– **Gymnosperms(Pinus)**	**VMMC-2012 / BCECE-2010 / JIPMER-2009, UP CPMT-2008, 2001 / MGIMS Wardha-2008, BHU PMT(Screening)-2006 / Rajasthan PMT-2008, CG PMT-2008**
Population, whose members reproduce sexually are termed as– **Apomictic**	**Haryana PMT-2002**
Nucellar polyembryony is seen in the species of– **Citrus**	**JCECE-2018 / Rajasthan PMT-2009/ UPCPMT-2009**
Polyploidy can be produced artificially by– **Colchicine**	**DUMET-2009**
The number of capsomeres in the Tobacco mosaic virus capsid is– **2130**	**Tripura JEE-2021**
Nucleic acid is absent in– **Prion**	**Rajasthan PMT-2011**
Apomixis is the production of a new plant through– **Vegetative propagation, Apogamy, Diplospory**	**AMU-1996**
Formation of diploid embryosac from diploid vegetative structure, eg, nucellus or integument etc., without meiosis is called– **Apospory**	**BCECE-2007**

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02.

HUMAN REPRODUCTION

2.1 Male Reproductive System

- Secretions from ..... are rich in fructose, calcium and some enzymes–**Male accessory glands**
- ..... part of the sperm plays an important role in penetrating the egg membrane– **Acrosome**
- Acrosome contains– **Hydrolytic enzyme**
- The middle piece of the sperm contains– **Mitochondria**
- In most mammals, the testes are located in scrotal sac for– **Spermatogenesis**
- Temperature of the scrotum which is necessary for the functioning of testis is always around ..... below body temperature– **2^0C**
- The nutritive cells found in seminiferous tubules are– **Sertoli cells**
- The function of Sertoli cells is– **Nutrition of germ cells**
- ..... is a transporting tube leading from the bladder which brings urine outside the body via penis– **Urethra**
- Fructose, calcium and certain enzymes in human is rich in– **Seminal plasma.**
- A sex gland which secretes fructose that provides energy to spermatozoa for swimming that stimulate uterine contractions to aid sperm-ovum interaction is– **Cowper's gland, Prostate gland, Seminal vesicle**
- Prostate glands are located below– **Seminal Vesicles**
- The function of the secretion of prostate gland is to– **Stimulate sperm activity**
- Cross section from mid-region of middle piece of human sperm will represent– **9 + 2 arrangement of microtubules and numerous mitochondria**
- Sperm motility occur due to activation of the sperms by the viscous liquid. The liquid is secreted by– **Secretory cells of the epithelial lining of genital tract**
- Accessory reproductive gland's secretion associate with sperms firstly– **Seminal vesicle**
- _____ produces sperms in spermatogenesis– **Immature male germ cells**
- The enlarged end of penis is covered by a loose fold of skin is called– **Foreskin**
- Vasa deferentia are the ductules leading from– **Epididymis to ejaculatory duct**
- Sertoli cells are found in– **Seminiferous tubules and provide nutrition to germ cells**
- The shared terminal duct of the reproductive and urinary system in the human male is– **Urethra**
- The release of semen into vagina is called– **Insemination**
- Interstitial cells secrete hormones called– **Androgens**
- Sperm production takes place in– **Seminiferous tubule**
- Vasa efferentia exist in between– **Rete testis and epididymis**
- External opening of the penis is called– **Urethral meatus**
- The enlargement end of the penis called– **Glans penis**
- The duct ..... carries sperms from testis to epididymis is– **Vasa efferentia**
- Bulbourethral gland help in the– **Lubrication of penis**
- Prostate gland is present– **Below seminal vesicles**
- The secretion of the seminal vesicle contain– **Fructose + Calcium + Certain enzymes**
- Testosterone is produced by– **Leydig cells**
- Role of Leydig cells of testis is to– **Synthesise testosterone hormone**
- The region outside the seminiferous tubules called– **Interstitial spaces**
- The epididymis leads to vas deferens that ascends to the – **Abdomen**
- If the epididymis is not presented then what will happen– **Sperm will be incapable for fertilization**
- In human, the unpaired male reproductive structure is– **Prostate gland**
- The sperms undergoes physiological maturation, acquiring increased motility and fertilizing capacity in– **Epididymis**
- If for some reason, the vasa efferentia in the human reproductive system get blocked, the gametes will not be transported from– **Rete testis to epididymis**

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2.2 Female Reproductive System

- The female external genitalia include– **mons pubis, clitoris, labia majora**
- A sectional view of mammary gland shows– **Nipple + areola, ampulla + lactiferous duct**
- Milk secreted from the cells of alveoli of mammary lobes reaches nipple through lactiferous duct (L), mammary duct (M), mammary tubule (T) and mammary ampulla (A) in the order of– **TMAL**
- ___glands are situated on either side of vagina in humans– **Bartholin's glands**
- Muscles in the pelvic area where a fertilized egg or zygote comes to grow into a baby is called– **Uterus**
- Part of fallopian tube is close to ovary– **Infundibulum**
- Widest part of fallopian tube is called– **Ampulla**
- Fallopian tube is the part of– **Oviduct**
- The structures secrete milk in mammary gland– **Cells of alveoli**
- The main function of mammalian corpus luteum is to produce– **Progesterone**
- Female accessory ducts include– **Oviducts, uterus and vagina**
- The shape of the uterus is– **Inverted pear**
- The finger-like projections found at the edges of the infundibulum are called– **Fimbriae**
- Cervix occurs in– **Between uterus and vagina**
- The part of fallopian tube which is funnel shaped is– **Infundibulum**
- The layer of uterus exhibits strong contraction during parturition is– **Myometrium**
- Fatty tissue is like cushion covered by skin and pubic hair in female external genitalia– **Mons pubis**
- Hymen is a– **Membrane often covering the opening of vagina partially**
- The finger-like tiny structure is– **Clitoris**
- The structure is often torn during first coitus– **Hymen**
- The glandular tissue of each breast in female human is divided into– **15-20 mammary lobes**
- Lower narrow end of uterus through which it opens into vagina is called– **Cervix**
- Ovary is a part of - **Female reproductive system**

2.3 Gametogenesis

- Seminiferous tubules and provide nutrition to germ cells are found in– **Sertoli cell**
- Meiotic division of the secondary oocyte is completed– **At the time of fusion of a sperm with an ovum**
- AT which stage of life the oogenesis process is initiated– **Embryonic development stage**
- Acrosomal reaction of the sperm occurs due to– **Its contact with zona pellucida of the ova**
- ..... has 23 chromosomes– **Secondary oocyte**
- 1st polar body is formed at which stage of oogenesis– **1st meiosis**
- Primary follicle, graafian follicle, blood vessel and cropus luteum we can find in– **Ovary.**
- Secondary oocyte released from– **Ovary**
- During oogenesis, each diploid cell produces– **One functional egg and three polar bodies**
- In oogenesis haploid egg is fertilised by sperm at which stage– **Secondary oocyte**
- ..... sperms and ova are produced from 100 secondary spermatocytes and equal number of primary oocytes respectively– **200 spermatozoa and 100 ova**
- Polar bodies are produced during the formation of– **Secondary oocyte**
- In humans, at the end of the first meiotic division, the male germ cells differentiate into the– **Secondary spermatocytes**
- In spermatogenesis, reduction division of chromosome occurs during conversion of– **Primary spermatocytes to secondary spermatocytes**
- In oogenesis, the secondary follicle soon transforms into a tertiary follicle which is characterised by a fluid filled cavity called– **Antrum**
- Quantity of sperms, are formed from a secondary spermatocyte– **2**
- In human during ovulation– **Secondary oocyte released from mature follicle**
- In the process of spermatogenesis, first maturation division is called– **Reduction division**
- In human at the end of first meiotic division, the male germ cells differentiate into the– **Secondary spermatocytes**
- Sertoli cells are regulated by the pituitary hormone known as– **FSH**
- Transformation of spermatids into spermatozoa is called as– **Spermiogenesis**
- The haploid nucleus is present in which part of the sperm– **Sperm Head**
- Tertiary follicles are characterized by–**By the presence of fluid filled cavity called antrum.**
- Spermatozoa are produced through one spermatogonia– **4**
- After the completion of meiosis-I division each primary spermatocyte gives rise– **Two equal haploid cells**

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- Release of sperms from seminiferous tubules is called– **Spermiation**
- FSH acts on– **Sertoli cells**
- Spermatogenesis is induced by– **GnRH**
- Sperms are formed from 4 primary spermatocytes, is – **16**
- A primary spermatocyte is– **Diploid**
- Polar bodies develop during the formation of– **Ova**
- Each secondary spermatocyte undergoes meiosis-II division and forms– **4 equal haploid spermatids**
- Identify the cells which are stimulated by LH and synthesise androgens– **Leydig cells**
- In a mammalian sperm, spirally arranged mitochondria around an axial filament occurs in– **Middle piece**
- Cap-like structure covering the anterior portion of sperm is called– **Head**
- The function of mitochondria in sperm is to– **Provide energy for the movements of sperm**
- The diploid stages in gametogenesis is– **Spermatogonia and primary spermatocytes**
- In spermatogenesis, the phase of maturation involves– **Formation of spermatids from primary spermatocytes through meiosis**
- The second maturation divisions of the mammalian ovum occurs– **Until after the ovum has penetrated by a sperm**

2.4 Menstrual Cycle

- A human female reaches menopause around the age of– **50 years**
- Cessation of menstrual cycle in a woman is called– **Menopause**
- Name the hormone that has no role in menstruation– **Adrenaline**
- Withdrawal of the hormones that is the immediate cause of menstruation– **Progesterone**
- At menopause there is pause in– **Menstruation**
- If mammalian ovum fails to get fertilised, ... is unlikely– **Estrogen secretion increases**
- During bleeding phase of menstrual cycle unfertilised secondary oocyte undergoes autolysis. The interplay of hormones then is progesterone inhibits the release of LH from pituitary causing regression of– **Corpus luteum.**
- In the 28 days human ovarian cycle, the ovulation takes place typically on– **Day 14 of the cycle**
- The time for optimum chances of conception in a woman is ..... starting from the day of menstruation– **14th day**
- Ovulation in the human female normally takes place during the menstrual cycle– **At the end of the proliferative phase**
- After ovulation, Graafian follicle regresses into– **Corpus luteum**
- The part of ovary in mammals acts as an endocrine gland after ovulation– **Graafian follicle**
- The phase of menstrual cycle in humans that last for 7-8 days, is– **Follicular phase**
- Peak secretion of estrogen occurs– **Just before ovulation**
- Mainly _____ hormones control menstrual cycle in human beings– **FSH, LH, Estrogen**
- The pregnancy test is based on detection of _____ hormone– **hCG(Human Chorionic gonadotropin)**
- Tertiary follicle is characterised by– **A fluid filled cavity called antrum**
- The phase of menstrual cycle in human that lasts for 7-8 days is– **Follicular phase**
- Ovulation occurs under the influence of– **LH**
- At …… of the menstrual cycle, both LH and FSH are high– **Proliferative phase**
- The level of progesterone is high at which……. phase in the menstrual cycle– **Luteal phase**
- Estrogen is secreted by– **Graafian follicle**
- Progesterone level falls during– **Menopause**
- During proliferative phase, uterine wall undergoes certain changes, these are– **Blood vessel in endometrium becomes long and coiled**
- Menstrual flow occurs in– **Menstrual phase**
- Corpus luteum secretes large amounts of– **Progesterone**
- Hormone is essential for the maintenance of endometrium is– **Progesterone**
- Follicular phase of menstrual cycle is the other name of– **Proliferative phase**
- The phase of menstrual cycle when fertilization is possible in– **Luteal phase**
- In the fertile human female, approximately, on which day of the menstrual cycle does ovulation take place– **Day 14**
- During the ovulatory phase, the structure called corpus luteum is formed from– **Ruptured Graafian follicle**
- The phase of menstrual cycle in humans that lasts for 3-4 days is– **Menstruation phase**

2.5 Fertilization and Implantation

- The second maturation division of the mammalian ovum occurs– **Until after the ovum has been penetrated by a sperm**

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- In oocyte secondary maturation occurs in– **Fallopian tube**
- Extrusion of second polar body from egg occurs– **After entry of sperm but before fertilisation**
- True about cleavage in the fertilised egg in humans– **It starts while the egg is in fallopian tube**
- The solid mass of 8-16 cells formed from zygote after successive mitotic divisions is called– **Morula**
- Presence of XX or XY chromosomes in zygote depends on– **The sperm carrying X or Y chromosomes fertilised the ovum**
- Fertilisation is defined as the process by which a haploid spermatozoon unites with a haploid ovum to form a– **Diploid zygote**
- A regular cycling woman is not menstruating. The most likely root cause of this is– **Fertilisation of the ovum**
- ..... state of life is oogenesis initiated in a human female– **During embryonic development**
- Zona pellucida is synthesized by– **Oocyte**
- Trophoblast and inner cell mass are the arrangements of blastomeres as outer and inner layers respectively– **In Blastocysts**
- Presence of XX or XY chromosomes in zygote depends on– **The sperm carrying X or Y chromosome fertilized the ovum**
- _____ layer of blastocysts gets attached to the endometrium– **Trophoblast**
- First polar body is formed during the formation of _____ and completion of I meiotic division– **Secondary oocytes**
- Second meiotic division in secondary oocyte results in the formation of– **Secondary polar body and a haploid ovum**
- Foetal ejection reflex in human female is induced by– **Fully developed foetus and placenta**
- Covering of egg from outside to inside– **Corona radiata → Zona pellucida → Vitelline membrane**
- Development of blastocyst and its attachment to the uterine wall in human beings is called– **Implantation**
- ……. differentiate into embryo – **Inner cell mass**
- Fertilization takes place in– **Ampulla**
- During oogenesis haploid egg is fertilized by sperm in stage of– **Secondary oocyte**
- The outer layer of blastocyst is known as– **Trophoblast cell**
- Egg is liberated from ovary in– **Secondary oocyte stage**
- Normal human male produces– **50% sperms with X chromosome and 50% sperms with Y chromosome**
- …….layer of blastocyst gets attached to the endometrium– **Trophoblast**
- The human embryo, with 8 to 16 blastomere is called– **Morula**
- …….takes part in formation of placenta– **Trophoblast, mesoderm and allantois**
- The zygote carrying XX chromosomes develops into– **Female**
- The zygote carrying XY chromosomes is– **Normal male**
- The sex of a baby scientifically is determined by– **Father**
- The sex of the foetus will be decided by– **Fertilization by male gamete**
- The embryo at 16-celled stage is known as– **Morula**
- Freshly released human gamete has– **One X or Y -chromosome**
- During fertilization, sperms come in contact with …….layer to block the entry of additional sperms– **Zona pellucida**

2.6 Pregnancy and Embryonic Development

- Structure connecting the fetus to placenta is– **Umbilical cord**
- Chorionic villi, uterine tissue consist of– **Placenta**
- Fetus gets nourishment and oxygen through– **Placenta**
- hCG, hPL and relaxin are produced in women– **Only during pregnancy**
- The hormones that is not a secretory product of human placenta– **Prolactin**
- Urine test during pregnancy determines the presence of– **Human chorionic gonadotropin hormone**
- In a normal pregnant women, the amount of total gonadotropin activity was assessed. The result expected was high level of circulating hCG to stimulate –**Estrogen and progesterone synthesis**
- The corpus luteum secretes progesterone ..... is essential for maintenance of– **Endometrium of uterus**
- During the development of embryo, ... occurs first– **Differentiation of cells**
- The placenta is formed from the ..... of the embryo and the ..... of the mother– **Chorion, Uterine tissue**

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- By the end of how many weeks, major organ system are formed during the embryonic development– **12 weeks**
- Most of the organs/system in foetus are formed by the end of– **1st trimester**
- The first movements of foetus and appearance of hair on head are observed during– **5th month**
- Increased level of hCG during pregnancy stimulate– **Progesterone**
- Placenta is the region where– **Foetus receives nourishment from mother's blood**
- Placenta is– **Chorionic villi + Uterine tissue**
- Produced by ovary in later phase of pregnancy, the hormone is– **Relaxin**
- Eye lids and eye lashes are formed– **6th month**
- ……..germinal layer is outer layer in the embryo– **Ectoderm**
- In human beings after one month of pregnancy, that organ is formed– **Heart**
- In the event of pregnancy, the corpus luteum persists under the influence of– **Chorionic gonadotropin**
- Gestation period in human– **9 months**
- Stem cells in the embryo have the potency to give rise to all tissues and organs are formed from - **Inner cell mass**
- The first sign of growing foetus may be noticed by observing– **Heart sound**
- Extra-embryonic membranes provide– **Protection to embryo, Cells to the embryo**
- Extra-embryonic membranes of the mammalian embryo are derived from– **Trophoblast**
- Name the structure that provides nutrition to embryo is called– **Placenta**
- First formed layer of embryo is– **Mesoderm**
- _____ + _____ = Birth canal – **Cervical canal + Vagina**
- Correct sequence in embryo development– **Cleavage, blastulation, gastrulation**
- In mammals, the onset of pregnancy causes– **Inhibition of further ovulation**

2.7 Parturition and Lactation

- Delivery of developed fetus is scientifically called– **Parturition**
- In human adult females causes strong uterine contractions during parturition– **Oxytocin**
- The stimulatory reflex between uterine contractions and oxytocin causes– **Expulsion of baby and placenta is also expelled out**
- After birth, colostrum is released from mammary glands which is rich in– **Proteins, antibodies and low in fat**
- The colour of the colostrum is– **Yellow**
- Parturition is induced by a complex– **Neuro - endocrine mechanism**
- Signals for parturition originate from– **Both placenta as well as fully developed foetus**
- The mammary glands of the female undergo ..... during pregnancy– **Differentiation**
- Thick yellow, high protein fluid produced by mammary glands of a women during first 2-3 days after child birth is– **Colostrum**

2.8 Miscellaneous

- Spot the odd one out from the ..... structures with reference to the male reproductive system– **Isthmus**
- The ciliated columnar epithelial cells in human are known to occur in– **Bronchioles and Fallopian tubes**
- Seminal plasma, the fluid part of semen, is contributed by– **Seminal vesicle, Prostate gland, Bulbourethral gland**
- Spermiation is the process of the release of sperms from– **Seminiferous tubules**
- Mature Graafian follicle is generally present in the ovary of a healthy human female around– **11-17 day of menstrual cycle**
- Acrosomal reaction of the sperm occurs due to– **Its contact with zona pellucida of the ova**
- ……. is not a male accessory gland– **Ampulla**
- Hormones is not secreted by human placenta– **LH**
- The vas deferens receives duct from the seminal vesicle and opens into urethra as– **Ejaculatory duct**
- Urethral meatus refers to the– **External opening of the urogenital duct**
- Morula is a developmental stage– **Between the zygote and blastocyst**
- The membranous cover of the ovum at ovulation is– **Corona radiata**
- At…… stage of life the oogenesis process is initiated– **Embryonic development**
- Receptors for sperm binding in mammals are present on– **Zona pellucida**
- …… hormone levels will cause release of ovum (ovulation) from the graafian follicle– **High concentration of Estrogen**
- The amnion of mammalian embryo is derived from– **Ectoderm and mesoderm**

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EXAM POINT

The Male Reproductive System	
The male sex accessory ducts include– **Rete testis, Vasa efferentia, Epididymis and Vas deferens**	**Karnataka CET-20.05.2023**
The correct transportation of sperm cells in male reproductive system is– **Seminiferous tubules – Rete testes - Vasa efferentia - Epididymis - Vas deferens - Ejaculatroy duct - Urethra**	
Vasa efferentia are the ductules leading from– **Rete testis to vas deferens**	**AIPMT (Screening)-2010**
Sertoli cells are found in– **Seminiferous tubules and provide nutrition to sperm**	**AIPMT (Screening)-2010**
Movement of sperm is done by– **Tail**	**Haryana PMT-1999**
Seminal plasma in humans is rich in– **Fructose, calcium and certain enzymes**	**AP EAMCET-03.09.2021 Shift-I, AIPMT-2009**
The accessory that genital gland occurs only in mammalian male is– **Prostate gland**	**Karnataka CET-2007, MHT CET-2004**
The Leydig cells as found in the human body are the secretory source of– **Androgens**	**AIPMT (Screening)-2012**
The forms that axial filament of the human sperm is– **Distal centriole**	**GUJCET-2018**
In spermatogenesis, reduction division of chromosome occurs during conversion of– **Primary spermatocytes to secondary spermatocytes**	**WB JEE-2012**
In man, the sperms are stored and nourished in– **Epididymis**	**BVP-2010**
Few scientist state vas deferens as seminal vesicle and seminal vesicle as vas deferens, because– **Sperms mature in vas deferens**	**Rajasthan PMT-1996**
Sertoli cells help in– **Maturation of sperms**	**DUMET-2005 / UP CPMT-2003**
Caput epididymis is a narrow tubule present on the inner side of testis. It is present in between– **Vasa efferentia and corpus epididymis**	**VMMC-2013**
Antifertilizin is present on– **Spermatozoa**	**AMU-2005 / Manipal-2004**
The testis are situated outside the abdominal cavity in scrotum as it helps to– **Maintain the low temperature**	**Karnataka CET-2022**
Pseudostratified columnar epithelium of epididymis is called – **Stereocilia**	**AMU-2010**
Which cells in the germinal epithelium of the seminiferous tubules – **Sertoli cells**	**Rajasthan PMT-2011 / Karnataka CET-2003**
…… is found inside graafian follicle. **Fluid - filled cavity**	**Manipal-2011**
Orchidectomy is the removal of – **Testes**	**CG PMT-2011**
Capacitation of sperm in mammals involves– **Acrosome reaction**	**CG PMT-2010**
The bulbourethral gland of the male reproductive system is also called– **Cowper's gland**	**Tripura JEE-2022**
Testes descend into scrotum in mammals for– **Spermatogenesis**	**AFMC-2001**
Fructose is contributed to the semen by– **Seminal vesicles**	**MHT CET-04.10.2020 Shift-I, MHT CET-2019**
Spermatids are transformed into spermatozoa by– **Spermiogenesis**	**UP CPMT-2013, Manipal-2004**

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Androgen binding protein is produced from– **Sertoli cell**	**Tripura JEE-2017**
Failure of descending of testis into scrotum is known as– **Cryptorchidism**	**Assam CEE-2014**
Leydig cells are found in– **Testis**	**BVP-2004, JIPMER-2002**
Total number of secondary spermatocytes are required to form 400 million spermatozoa is– **200 million**	**NEET (Re-Exam)-04.09.2022**
The difference between spermiogenesis and spermiation is– **In spermiogenesis spermatozoa are formed, while in spermiation spermatozoa are released from sertoli cells into the cavity of seminiferous tubules**	**NEET-2018**
Spermatozoa receive nutrition from– **Epididymis**	**AIIMS-26.05.2018 Shift-I**
Each testis is connected to the wall of scrotum by short, fibromuscular band called– **Gubernaculum**	**MHT CET-2019**
Each testicular lobule contains____convoluted seminiferous tubules. **1 to 4**	**MHT CET-2018**
The constituent that of seminal fluid help in coagulation of semen after ejaculation is– **Fibrinogen**	**MHT CET-2016**
Cauda epididymis leads to– **Vas deferens**	**MHT CET-2004**
"Testis are extra abdominal in position'. The most appropriate reason is– **2.0 – 2.5° C lower than the normal body temperature**	**MHT CET-2014**
Human sperm was discovered by– **Leeuwenhoek**	**AP EAMCET-25.09.2020 Shift-I**
The male accessory genital glands produce citric acid and prostaglandins is– **Seminal vesicles**	**TS EAMCET-15.05.2016**
Excessive development of mammary glands in males is called– **Gynaecomastia**	**J&K CET-2010**
In males testes are contained in the scrotal sacs because– **It provides temperature that is slightly lower than body temperature required for formation of functional sperms**	**CMC Vellore-2008**
Acrosome secretes– **Hyaluronidase**	**MGIMS Wardha-2012, Rajasthan PMT-2006, 1999**
Acrosome of sperm contains– **Hydrolytic enzyme**	**AP EAMCET-24.09.2020 Shift-I**
Vas deferens starts from the part that of epididymis is– **Caudal epididymis**	**AP EAMCET-24.09.2020 Shift-I**
Prostate gland secretion help in formation of– **Semen**	**BVP-2001**
The narrow passage, which connects the abdominal cavity with the scrotal sacs, is– **Inguinal canal**	**MHT CET 5.10.2020 Shift-I**
The Female Reproductive System	
In the female reproductive system, a tiny finger like structure which lies at the upper junction of the two labia minora above the urethral opening is called– **Clitoris**	**Karnataka CET-20.05.2023**
In humans the maternal blood comes into direct contact with foetal chorion, so the placenta is described as– **Haemochorial**	**AP EAPCET-11.05.2023, Shift-I**
Meiotic division of the secondary oocyte is completed– **At the time of fusion of a sperm with an ovum**	**NEET-2020 Phase-I**
The fallopian tube that is blocked at ampullary region, the ovum fails to move from– **Infundibulum Isthmus**	**Karnataka CET-2020**

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Corpus luteum in mammals occurs in– **Ovaries and produces progesterone**	**MGIMS Wardha-2014**
Corpus luteum is developed from– **Left over Graafian follicle after release of ovum**	**AMU-2011**
In humans, the oocyte is maintained in a state of meiotic arrest by secretions of– **Granulosa cells**	**AMU-2010**
The structure, capable of stretching many times of its size, is– **Uterus**	**AMU -2000**
Secondary sexual characters in females develop in response to hormone– **Estrogen**	**CG PMT-2007 / Haryana PMT-2003**
The endometrium is the lining of– **Uterus**	**JCECE-2018, Rajasthan PMT-2011**
The mammalian follicle in ovary was first described by– **Reinier De Graaf**	**JIPMER-2000**
The inner lining of the uterus called– **Endometrium**	**J&K CET-2015**
The part of fallopian tube closest to the ovary is– **Infundibulum**	**GUJCET-2020 / MHT CET-2019 / J&K CET-2015 AIPMT (Screening)-2010**
Clitoris in female mammals is– **Homologous to penis of male**	**Haryana PMT-1999**
Graafian follicle contains– **Theca externa and theca interna**	**VMMC-2014/Manipal-2013 BCECE-2012 / AMU-2005, BVP-2005 / Haryana PMT-2004 /Manipal-2003**
The gland that in the male human being is homologous to the vestibular gland in the human female– **Cowper's gland**	**MHT CET-07.10.2020 Shift-I**
In human beings, the oviduct is supported by a double fold of peritoneum called– **Mesosalpinx**	**MHT CET-06.10.2020 Shift-I**
Atretic follicles are found in the– **Ovary**	**AIIMS-2014 CG PMT-2011**
Bartholin's glands are situated– **On each side of vagina in humans**	**JIPMER-2013, MGIMS Wardha-2010, AIPMT-2003**
The hormones that can play a significant role in osteoporosis– **Estrogen and Parathyroid hormone**	**NEET-2018**
In human beings, the follicular cells of Graafian follicle secrete– **Estrogen**	**MHT CET-08.10.2020 Shift-I**
The part of oviduct, that joins the uterus– **Isthmus**	**GUJCET-2021, MHT CET-2019**
During embryonic development endoskeleton and muscle develop from which germinal layer– **Mesoderm**	**BVP-2003**
The gland in female that is a counter part of cowper gland in male is– **Bartholin gland**	**BVP-2005 / Haryana PMT-2004, Manipal-2003**
The hormones that is a modified amino acid is– **Epinephrine**	**AIPMT-2004**
Several hormones like hCG, hPL, estrogen, progesterone are produced by– **Placenta**	**NEET-2016 Phase-II**
Receptors for sperm binding in mammals are present on– **Zona pellucida**	**NEET-2021**
Fimbriae are associated with the organ– **Fallopian tube**	**JIPMER-2018**
Progesterone is secreted by– **Corpus luteum**	**JIPMER-2005**

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Egg is liberated from ovary in– **Secondary oocyte stage**	**AIPMT-1989**
Vaginal bacteria which mainly maintain acidic medium are– **Lactobacillus**	**MHT CET-2019**
In ovary estrogen is secreted by– **Follicular cells**	**MHT CET-2018**
The glycoprotein, fertilizin is secreted by– **Ovum**	**MHT CET-2015**
The main function of the fimbriae of the fallopian tube in females is to– **Help in the collection of the ovum after ovulation**	**Kerala PMT-2011**
Accessory ducts of reproductive system of human female include– **Oviduct, uterus and vagina**	**Karnataka CET-2017**
In human females, the number of primary follicles left in each ovary at puberty is– **60,000 - 80,000**	**Karnataka CET-2017**
The organs that is devoid of glands– **Vagina**	**DUMET-2011**
In mammals corpus luteum is found in which organ– **Ovary**	**Rajasthan PMT-2002**
Skene's glands in females are homologous to– **Prostate gland**	**A TS EAMCET-09.08.2021 Shift-I**
Corpus luteum is formed in– **Ovary**	**CG PMT-2004**
The blood vessel and nerves enter the ovary through– **Hilum**	**Uttarakhand PMT-2011**
Gametogenesis	
The second maturation division of the mammalian ovum occurs is– **Until after the ovum has been penetrated by a sperm**	**AIPMT (Screening)-2010**
A change in the amount of yolk and its distribution in the egg will effect– **Pattern of cleavage**	**AIPMT-2009**
The number of chromosomes in a primary spermatocyte is– **Same as in spermatogonium**	**JIPMER-2015**
The spermatogonia accumulates large amount of nutrient and chromatin material and increase in size, now it is known as– **Primary spermatocytes**	**GUJCET-2017**
The process of conversion of non-motile spermatids into motile spermatozoa is called– **Spermiogenesis**	**Tripura JEE-2019, Karnataka CET-2018**
Vitellogenesis occurs during the formation of– **Primary oocyte in the Graafian follicle**	**Karnataka CET-2009, Manipal-2009**
In the absence of .....the sperm cannot penetrate the egg. **Acrosome**	**Karnataka CET-2010**
In humans, at the end of the first meiotic division, the male germ cells differentiate into the– **Secondary spermatocytes**	**TS EAMCET-12.05.2017, BHU PMT (Screening)-2010, AIPMT-2008**
The part of ovary in mammals that acts as an endocrine gland after ovulation– **Graafian follicle**	**AIPMT-2007**
Acrosome is formed by– **Golgi apparatus**	**VMMC-2013 / UP CPMT-2005, Rajasthan PMT-1995 / AIIMS-1999**
The absence of sperm in seminal fluid is called– **Azoospermia**	**UP CPMT-2014**
During a woman life time, she produces about– **400-500 eggs**	**WB JEE-2006**
In human zygote, the male sex is determined by whether– **Required composition of chromosomes**	**Punjab MET-1999**

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Enzyme present in sperm acrosome to dissolve egg membrane is– **Sperm lysin**	**BCECE-2005**
Spermatids are formed after the second meiotic division from secondary spermatocytes. The ploidy of the secondary spermatocytes is– **n**	**KVPY SB & SX-2015**
The ovum of human female has autosomes– **22**	**Manipal-2011**
During gametogenesis, unequal cytoplasmic divisions take place in– **Maturation phase of oogenesis**	**MHT CET 5.10.2020 Shift-I**
Usually at which pH, the human sperms become motile is– **7.2 to 7.8**	**MHT CET 5.10.2020 Shift-I**
The portion of human sperm that contain enzymes is– **Acrosome**	**UP CPMT-2012**
The undergoes spermiogenesis is– **Spermatids**	**Uttarakhand PMT-2004 / AMU-2005**
The anterior portion of the sperm head which is covered by a cap-like structure called– **Acrosome**	**J&K CET-2014**
Each secondary spermatocyte after second meiotic division produces is– **Two haploid spermatids**	**Kerala PMT-2015**
The nuclear structure observed by Henkings in 50% of the insect sperm after spermatogenesis was– **X body**	**Kerala PMT-2015**
The activity that occurs first during the development of an egg is– **Polarity**	**Rajasthan PMT-1998**
Total number of sperms are formed by four primary spermatocyte is– **16**	**JIPMER-2006, MGIMS Wardha-2005**
Polar bodies are produced during the formation of– **Secondary oocyte**	**CMC Vellore-2014 / UP CPMT-2001, Punjab MET-1999**
In spermatogenesis the phase of maturation involves– **The formation of spermatids from primary spermatocytes through meiosis**	**Karnataka CET-2003**
Fertilizin is a chemical substance produced from– **Mature eggs (ovum)**	**Manipal-2015 / CMC Ludhiana-2008, AMU-2006 / AIPMT-1997, 1991**
Total number of ova and sperms would be produced from 100 secondary oocytes and 100 secondary spermatocytes during gametogenesis in humans– **100 ova, 200 sperms**	**JIPMER-2001**
Enzyme hyaluronidase is synthesised in– **Golgi body of acrosome**	**Manipal-2013**
The Leydig cells found in the human body are the secretary source of– **Androgens**	**J&K CET-2015**
Middle piece of sperm contains is– **Mitochondria, centriole, axial filament**	**CMC Vellore-2010/ J&K CET-2006**
Polar bodies are formed during– **Oogenesis**	**CG PMT-2006**
Total number of chromosomes are usually found in the human secondary oocyte– **23**	**MHT CET-07.10.2020 Shift-I / JIPMER-2019, VMMC-2002 / Rajasthan PMT-2001**
In human beings, how much quantity of semen is contributed by the prostate gland– **30%**	**MHT CET-07.10.2020 Shift-I / MHT-2017**
The actual genetic part of sperm is– **Head**	**VMMC-2010**
If the proximal centriole of the mature sperm is destroyed, The is likely to be affected– **Cleavage**	**VMMC-2015**

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The process of release of mature spermatids from Sertoli cells into the seminiferous tubule lumen is called– **Spermiation**	**Tripura JEE-2022**
The present that in the middle piece of sperm is– **Mitochondria**	**AFMC-2010**
Layers of an ovum from outside to inside is– **Corona radiata, zona pellucida and vitelline membrane**	**BCECE-2008 / UP CPMT-2007**
Cytoplasm surrounding mitochondria present in the middle piece of sperm is– **Microplasm**	**Manipal-2006**
In human beings, the largest cell formed during oogenesis is– **Secondary oocyte**	**MHT CET-08.10.2020 Shift-I**
The corona radiata present around the female gamete is made up of– **Granulosa cells**	**MHT CET-08.10.2020 Shift-I**
A gamete normally contains– **One allele of a gene**	**UP CPMT-2013**
The formation of egg and sperm is affected by– **FSH (Follicle Stimulating Hormone)**	**UP CPMT-2003**
The secondary spermatocytes of human are– **Haploid**	**Tripura JEE-2017**
A role of Sertoli cells in Spermatogenesis is– **They provide nutrition to developing sperm; they direct morphogenesis of sperm**	**GUJCET-2008**
The chemical substance released by activated spermatozoa that acts on the ground substances of the follicle cells is known as– **Hyaluronidase**	**Kerala PMT-2009**
Extrusion of second polar body from egg nucleus occurs– **After entry of sperm but before at the completion fertilization**	**NEET-2019**
Number of chromosomes present in spermatogonium is– **46**	**JIPMER-2019**
In telolecithal egg the yolk is found– **On one side**	**AIPMT-1993**
In human beings, the eggs are– **Alecithal**	**AIPMT-1997**
A cross section at the midpoint of the middle piece of a human sperm will show– **Mitochondria and 9 + 2 arrangement of microtubules**	**AIIMS-2005**
Total number of sperms are formed from a secondary spermatocyte are– **2**	**AIIMS-2008, AIPMT-1990**
On the fourteenth day of the menstrual cycle the female gamete released is– **Secondary oocyte**	**MHT CET-2019**
The termination of process of oogenesis is indicated by formation of– **Second polar body**	**MHT CET-2018**
An axial filament in the tail of sperm is modified– **Distal centriole**	**MHT CET-2017**
The character that favours the process of normal spermatogenesis in human male is– **Descent of testes into scrotum**	**Karnataka CET-2017**
Mitochondria in middle piece of sperm is called– **Chondriosome**	**JIPMER-2002**
Oogenesis is the process for the formation of– **Ova**	**CG PMT-2005**
In a sperm, the mitochondria occur in– **Middle piece**	**CG PMT-2005**
During gametogenesis Meiosis I occur in– **Primary spermatocytes and primary oocytes**	**AP EAMCET-24.09.2020 Shift-II**
Primary spermatocyte differs from spermatogonium in– **Size and volume**	**DUMET-2011**
The number of autosomes in human primary spermatocyte is– **44**	**DUMET-2011**
Diploid cell is– **Spermatogonium**	**BCECE-2015**
When released from ovary, human egg contain– **One X chromosome**	**JCECE-2007 / AMU-2001 /AIPMT-1991**
During oogenesis, the small structure separated from egg is– **Polar bodies**	**JCECE-2006**

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Process of maturation and development of sperms is called– **Spermatogenesis**	**AFMC-2003**
Gametogenesis refers to the process of– **Formation of two types of gametes**	**AMU-2014**
Spermatid to spermatozoa is produced by the process of – **Spermatogenesis**	**J&K CET-2013**
The middle piece of the sperm contains– **Mitochondria**	**J&K CET-2013, 2011 / Punjab MET-2011, 2010**
Human gametes differ from all other body cells as they are– **Haploid**	**J&K CET-2013**
The stage that of spermatogenesis sperm acquire their whole structural maturity and they contain a haploid nucleus and other organs is– **Spermiogenesis**	**Rajasthan PMT-2002**
The reduction division in chromosomes takes place in– **Megaspore mother cell**	**Rajasthan PMT-1999, MGIMS WARDHA - 2012**
The groups of cells in the male gonad represent haploid cells is– **Secondary spermatocytes**	**Karnataka CET-2005**
The stage of life when oogenesis is initiated in a human female – **During embryonic development**	**AP EAPCET-07.09.2021 Shift-I**
Spermatogenesis is induced by– **FSH (Follicle Stimulating Hormone)**	**BUP-2014, Uttarakhand PMT-2009, BCECE-2003, Rajasthan PMT-2003**
Only one primary spermatocyte formed is– **Four sperms**	**Rajasthan PMT-1995**
Oogenesis comprises is– **multiplication phase, growth phase, maturation phase**	**CG PMT-2004**
Cumulus covers the – **Ovum**	**BVP-2011, AMU-1999**
Gametes formation in animals is found in– **Gonads**	**MGIMS Wardha-2012**
The release of sperms from the seminiferous tubules is called– **Spermiation**	**MHT CET-2019, Kerala PMT-2014, Kerala PMT-2008**

Menstrual Cycle

If in a normal menstruating woman, menses occur on 5th April, what will be the expected date of Ovulation– **18th April**	**Karnataka CET-2019**
Sudden reduction in estrogen and progesterone causes - **Menstruation**	**BCECE-2014 / JIPMER-2012, VMMC-2011 / Uttarakhand PMT-2009**
In a normal human menstrual cycle does rapid secretion of LH (popularly called LH-surge) normally occurs is– **14th day**	**AIPMT (Mains)-2011**
Which induces the development of corpus luteum– **LH (Luteinizing Hormone)**	**AIPMT-1999**
The time for optimum chances of conception in a woman is _____ starting from the day of menstruation **14th day**	**Karnataka CET-2012**
In the human female, menstruation can be deferred by the administration of– **Combination of estrogen and progesterone**	**AIPMT-2007**
The immediate cause of induction of ovulation in female is the large plasma surge of– **LH**	**CMC Vellore-2010 / JIPMER-2004, Punjab MET-2003 / DUMET-2001**

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The hormone that level reaches peak during luteal phase of menstrual cycle is– **Progesterone**	**J&K CET-2008**
Menstrual cycle is exhibited by– **Apes**	**Karnataka CET-2022**
In human females, the ovarian cycle begins when the– **Level of progesterone drops precipitously**	**J&K CET-2012**
Ovulation takes place in a month between– **14 - 16 day**	**MGIMS Wardha-2008 / JIPMER-2008 BCECE-2007, Punjab MET-2004 / DUMET-2001, Manipal-2000 / AIPMT-1994, 1997**
The first menstruation begins at puberty and is known as– **Menarche**	**JCECE-2018**
Painful menstruation is known as– **Dysmenorrhea**	**Tripura JEE-2019**
Progesterone level falls during– **Menopause**	**AMU-2008 / VMMC-2008**
Uterine endometrium, epithelial glands and connective tissue are broken in menstrual phase. That is due to– **Lack of progesterone**	**CMC Ludhiana-2008**
Cessation of menstrual cycle in women is called– **Menopause**	**MGIMS Wardha-2010**
Ovulation in the human female normally takes place during the menstrual cycle– **At the end of the proliferative phase**	**MGIMS Wardha-2009 / AIPMT-2004**
No new follicles develop in the luteal phase of the menstrual cycle because– **Both FSH and LH levels are low in the luteal phase**	**NEET (Odisha)-2019**
Menstrual flow occurs due to lack of– **Progesterone**	**CMC Villore- 2014, NEET-2013, DUMET-2002, 2001**
Withdrawal the hormones that is the immediate cause of menstruation is– **Progesterone**	**AIPMT-2006**
The secretory phase in the human menstrual cycle is also called– **Luteal phase and lasts for about 13 days**	**AIPMT (Mains)-2012**
Level of LH is maximum– **at the time of ovulation**	**JIPMER-2019**
Most important hormone in post ovulatory phase– **Progesterone**	**AIIMS-26.05.2018 Shift-II**
An oocyte is released from the ovary under the influence of LH– **After completion meiosis I and before release of polar bodies**	**AIIMS-2001**
The phase of menstrual cycle in humans that last for 7-8 days, is– **Follicular phase**	**Rajasthan PMT-2010 / WB JEE-2006, Punjab MET-2006 / AIIMS-2003**
Both corpus luteum and macula lutea are– **Characterized by a yellow colour**	**AIIMS-2003**
At menopause, here is rise in urinary excretion of– **FSH**	**AMU-2009**
Fertilisation and Implantation	
Fertilization in humans is practically feasible only if– **The ovum and sperms are transported simultaneously to ampullary- isthmic junction of the fallopian tube**	**NEET-2016 Phase-I**
The area just opposite to the site of entry of sperm into ovum is **-Grey crescent**	**JIPMER-2007**
The portion of the endometrium that covers the embryo and is located between the embryo and the uterine cavity is the– **Decidua capsularis**	**JIPMER-2015**

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What happens when during fertilisation in humans after many sperms reach close to the ovum– **Secretions of acrosome helps one sperm enter cytoplasm of ovum through zona pellucida**	**AIPMT (Mains)-2011 Manipal - 2005**
After ovulation follicles converted into– **Corpus luteum**	**AIPMT-1999**
Amount of cellular DNA increases during– **Fertilisation**	**AIPMT-1999**
In human during fertilisation a sperm firstly comes in contact with the layerthat of ovum is– **Corona radiata**	**JIPMER-2014**
During Fertilization, zona pellucida of ovum is dissolved by the enzyme released from the sperm– **Acrosin**	**TS EAMCET-10.08.2021 Shift-I**
Ovum receives the sperm in the region of– **Animal pole**	**UP CPMT-2011, J & K CET-2006**
The secretions that produced by the spermatozoa at the time of fertilization is– **Antifertilizin and sperm lysin**	**Karnataka CET-2006**
Fertilization of ovum takes place in rabbit, man and other placental mammals in– **Fallopian tube**	**J&K CET-2012 / CMC Vellore-2009, UP CPMT-2009 / Punjab MET-2009, Uttarakhand PMT-2007**
The function of copper T is to prevent– **Implantation of blastocyst**	**AFMC-2007**
Sperm penetration bring changes in ova, is– **meiosis-II**	**Rajasthan PMT-1998**
The semen fluid consists of sperm cells and secretion from– **Seminal vesicle, Prostate gland, Cowpers gland**	**HP CET-2011 / BCECE-2006, VMMC-2005 / AMU-2004 / BVP-2003**
Fixing up of the blastocyst in the wall of the uterus is known as– **Implantation**	**VMMC-2006**
The placenta of human beings belong to the category– **Hemochorial**	**CG PMT-2006**
During implantation, the cells of ____secrete lytic enzymes and destroy endometrial cells– **Syncytiotrophoblast**	**MHT CET-07.10.2020 Shift-I**
The stage that in test tube babies, the zygote is implanted in human female– **32-celled stage**	**CMC Vellore-2009**
During oogenesis in mammals, the second meiotic division occurs is– **After fertilisation**	**KVPY SA-2019, AIIMS-27.05.2018 Shift-I**
The stage that of life the oogenesis process is initiated– **Embryonic development stage**	**NEET-2022**
Embryo with more than 16 blastomeres formed due to in vitro fertilisation is transferred into– **Uterus**	**NEET-2016 Phase-II**
GnRH, a hypothalamic hormone, needed in reproduction, acts on– **Anterior pituitary gland and stimulates secretion of LH and FSH**	**NEET-2017**
Sperm and egg nuclei fuse due to– **Attraction of their protoplasts**	**AIPMT-1990**
Termination of gastrulation is indicated by– **Obliteration of blastocoel**	**AIPMT-1993**

Pregnancy and Embryonic Development

In surrogacy the part provided by the woman for the development of some other person's embryo until full development is– **Uterus**	
In which process the ovum is extracted and fertilized outside and zygote is transferred into the fallopian tube - **ZIFT (Zygote Intrafallopian Transfer)**	**AP EAPCET-11.05.2023, Shift-I**
In human beings, the foetal placenta is derived from– **Chorion**	**MHT CET-07.10.2020 Shift-I, Manipal-2006 / AFMC-2002**

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If cells destined to form endoderm in a gastrula are removed, the new individual will be devoid of– **Visceral organs**	**CG PMT-2011**
The extra embryonic membranes of mammalian embryo are derived from– **Trophoblast**	**CG PMT-2010**
At the time of implantation, the human embryo is called– **Blastocyst**	**Rajasthan PMT-2011**
The first movements of the foetus and appearance of hair on its head are usually observed during the month that of pregnancy– **Fifth month**	**Karnataka CET-2022 / AIPMT (Screening)-2010**
……. is regarded as urinary bladder of embryo. **Allantois**	**JIPMER-2012 / Uttarakhand PMT-2009**
Gonads are derived from– **Mesoderm**	**JIPMER-2015**
In a normal pregnant woman, the amount of total gonadotropin activity was assessed. The result expected was– **High levels of circulating HCG to stimulate estrogen and progesterone synthesis**	**AIPMT (Screening)-2012**
Oxytocin mainly helps in– **Child birth**	**AIPMT-1999**
Total number of foetal membranes are formed during the development of human embryo is– **4**	**AP EAMCET-12.07.2022 Shift-II**
…….. the height and weight of twelve weeks old human embryo is. **7.5 cm, 14 gram**	**GUJCET-2015**
The hormones that are secreted in large quantities during pregnancy in women is– **hCG and hPL**	**Karnataka CET-2014, AIPMT-2014**
The parts of that the vertebrate body arises from the mesoderm is– **Bony skeleton**	**Karnataka CET-2012**
Gastrula has a pore which is known as– **Blastopore**	**Karnataka CET-2010**
In case of pregnancy the heartbeat of embryo starts at– **5th week**	**JIPMER-2016**
Lens of eyes is derived from– **Ectoderm**	**JIPMER-2016**
The hormone that prepares and maintains the uterus during pregnancy is secreted by– **Corpus luteum**	**AP EAMCET-2005 / NEET-2001**
……. extraembryonic membrane in humans prevents desiccation of the embryo inside the uterus. **Amnion**	**JIPMER-2012 / BHU PMT (Screening)-2010, AIPMT-2008**
Notochord, skeletal system and dermis of the skin are the derivatives of– **Mesoderm**	**Karnataka CET-2008**
The events observed by the end of second month of pregnancy are– **Development of limbs and digits**	**AP EAMCET-25.04.2018 Shift-II**
The best definition of the process of gastrulation is that it is a process where the– **Cells move to occupy their definite position**	**UP CPMT-2011**
Medulla oblongata is originated from– **Ectoderm**	**UP CPMT-2011**
Archenteron is formed during – **Gastrulation**	**Rajasthan PMT-2004**
Epiboly and emboly takes place during – **Gastrulation**	**Rajasthan PMT-1996**
The basic principles of embryonic development were first given by– **Von Baer**	**MGIMS Wardha-2014**
Opening of gastrocoel is known as – **Blastopore**	**AIPMT-1992**
Human embryo will be called as a foetus after– **Two months**	**Manipal-2011**
A single layer of cells that composes epicardium is called– **Mesothelium**	**MHT CET 5.10.2020 Shift-I**

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The membranous areas between the cranial bones of the fetal skull are called– **Fontanelles**	**DUMET-2010**
The internal cavity commonly formed by cell division prior to gastrulation is the– **Blastocoel**	**DUMET-2010**
Blastopore is the opening to the exterior of– **Archenteron**	**AFMC-2007**
The foetal membrane that is directly connected with blood– **Chorion**	**Rajasthan PMT-1998**
Placenta present in mammals acts as an endocrine tissue and produces is– **Human chorionic gonadotropin (hCG)**	**BCECE-2014 / UP CPMT-2012**
The recapitulation theory or biogenetic law was proposed by– **Ernst Haeckel**	**AMU -2000**
The embryonic skeleton is formed by– **Hyaline cartilage**	**AMU-1999**
The embryo at 16 celled stage is known as– **Morula**	**VMMC-2012 / BCECE-2010 / JIPMER-2009, UP CPMT-2008 /MGIMS Wardha-2008**
The formation of erythrocytes in foetus takes place in– **Liver and spleen**	**Karnataka CET-2003**
The term blastocyst is applied to the blastula of– **Mammals**	**CG PMT-2007**
Women who consumed the drug thalidomide for relief from vomiting during early months of pregnancy gave birth to children with– **Under developed limbs**	**Haryana PMT-2004**
Gestation period of mouse is– **19 -21 days**	**VMMC-2014**
Cleavage is a unique form of mitotic cell division in that– **There is no growth of cells**	**JIPMER-2001**
During embryonic development endoskeleton and muscles develop from which germinal layer– **Mesoderm**	**BCECE-2006 / VMMC-2005, AMU-2004 / Haryana PMT-1999**
In a pregnant woman, is the major source of progesterone during the first trimester– **Corpus luteum**	**MHT CET-07.10.2020 Shift-I**
The embryonic membranes structure is excretory in function is– **Allantois**	**CG PMT-2009 / MGIMS Wardha-2009**
Trophoblast of the blastocyst gets differentiated into– **Chorion**	**BVP-2015**
Corpus luteum remains active during early pregnancy producing progesterone because of human Chorionic Gonadotropin (hCG). But in the later stages the production of progesterone is taken over by– **Placenta**	**BVP-2015**
Chromosomal imbalance is most frequent during which stages of human development– **Embryonic**	**CG PMT-2011**
Nervous system develops from– **Ectoderm**	**Rajasthan PMT-2000**
……. layer develops first during embryonic development. **Endoderm**	**BCECE-2008 / UP CPMT-2007**
The gestation period of elephant is about– **22 months**	**BCECE-2003**
Gastrulation means– **Formation of 3 germ layers**	**JIPMER-2019**
In Human beings, at the end of 12 weeks (first trimester) of pregnancy, the following is observed– **Most of the major organ systems are formed**	**NEET-2020 Phase-II**
Ectopic pregnancies are referred to as– **Implantation of embryo at site other than uterus**	**AIPMT (Re-Exam)-2015**
Hormones secreted by the placenta to maintain pregnancy are– **hCG, hPL, progesterones, estrogens**	**NEET-2018**

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The extra embryonic membranes of the mammalian embryo are derived from– **Trophoblast**	**AIPMT-1994**
Cells become variable in morphology and function in different regions of the embryo. The process is– **Differentiation**	**AIPMT-1989**
The hormone that helps in detection of pregnancy is– **hCG**	**AIIMS-27.05.2018 Shift-II**
The early stage human embryo distinctly possesses– **Gill slits**	**AIIMS-2003**
The structures that are derivatives of the endoderm is– **Alimentary canal and respiratory structures**	**Karnataka CET-2005**
Adult stem cells mostly belong to the type of– **Multi potent**	**AP EAMCET-12.07.2022 Shift-II**
Zonary placenta is found in– **Carnivores**	**MP PMT-2013**
Embryologist can draw the fate maps of future organs of embryo in– **Blastula**	**AMU-2003**
In the development of the human body, the ectoderm is responsible for the formation of– **Sweat glands, Nervous system, Lens of the eye**	**Punjab MET-1999**
Parturition and Lactation Process	
Signals from fully developed foetus and placenta ultimately lead to parturition which requires the release of– **Oxytocin from maternal pituitary**	**NEET (Karnataka)-2013 / AIPMT (Mains)-2010**
Foetal ejection reflex in human female is induced by– **Fully developed foetus and placenta**	**AIPMT (Screening)-2012 / AIPMT-2009**
When the MTP act came into force in India– **1971**	**GUJCET-2018**
Several mammary ducts join to form a wider structure called– **Mammary ampulla**	**Karnataka CET-2018**
Antibodies found in colostrums are mainly of this type– **$I_g A$**	**TS EAMCET-30.07.2022 Shift-II, TS EAMCET-10.08.2021 Shift-I**
The expulsion of completely developed foetus from the uterus is known as– **Parturition**	**BVP-2010**
The protein content is maximum in– **Colostrum**	**VMMC-2015**
First milk produced after child birth is called– **Colostrums**	**AMU-2003**
Name the hormone the stimulates that growth and development of breast in preparation for lactation– **Human placental lactogen**	
The yellowish fluid "colostrums" secreted by mammary glands of mother during the initial days of lactation has abundant antibodies (lgA) to protect the infant. This type of immunity is called as– **Passive immunity**	**NEET-2020 Phase-II**
The contraceptive that methods do involve a role of hormone is– **Lactational amenorrhea, Pills- Emergency contraceptives**	**NEET-2019**
Colostrum the yellowish fluid, secreted by mother during the initial days of lactation is very essential to impart immunity to the new born infants because it contains– **Immunoglobulin A**	**NEET-2019**
The hormones that is responsible for both the milk ejection reflex and the foetal ejection reflex is– **Oxytocin**	**NEET (Odisha)-2019**
Mammary glands are modified– **Sweat gland**	**AMU-2009**

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03.

REPRODUCTIVE HEALTH

3.1 Reproductive Health - Problems and Strategies

- RCH stands for– **Reproduction and child health care**
- ……..determine errors in amino acid metabolism in embryo, Pin point specific ailments in embryo, Determine any hereditary genetic abnormality in embryo- **Amniocentesis technique**
- Prenatal defects in the foetus can be detected by– **Amniocentesis**

3.2 Population Explosion and Birth Control

- In case of a couple where the male is having a very low sperm count, which technique will be suitable for fertilisation– **Artificial Insemination, Intracytoplasmic sperm injection**
- The function of copper ions in copper releasing IUDs is– **They suppress sperm motility and fertilising capacity of sperms**
- Tubectomy is a method of sterilisation in which– **Small part of the fallopian tube is removed or tied up**
- Oral contraceptive prevents pregnancy by– **Preventing implantation**
- One of the legal methods of birth control is– **Abortion by taking an appropriate medicine**
- Increased IMR and decreased MMR in a population will– **Result in decline in growth rate**
- Intensely lactating mothers do not generally conceive due to the–**Suppression of gonadotropins**
- Cause for increased population growth in India is– **Increase in birth rate, Decrease in death rate, Lack of education**
- ..... the pairs contributes to an increase in population– **Natality and immigration**
- That method of contraception has the higher failure rate is– **Rhythm method**
- An ideal contraceptive characteristic is not a– **Irreversible**
- Non-medicated intrauterine device (IUD) is a – **Lippes' Loop**
- Inhibiting physiological and morphological uterine changes required for implantation– **IUDs prevent pregnancy**
- CuT is an intrauterine contraceptive device———— Cu ions suppress sperm motility and the fertilising capacity of the sperms– **Defines the role of Cu.**
- Cu ions released from copper releasing intrauterine devices (IUDs)– **Suppress sperm motility**
- The birth control device used by women are– **Diaphragm, Vault, Copper T**
- Emergency contraceptive could be used to avoid possible pregnancy due to– **Casual unprotected intercourse**
- The most important component of oral contraceptive pills is– **Progestogen-estrogen**
- Progesterone pill helps in preventing pregnancy by not allowing– **Ovulation, Fertilisation, Implantation**
- Birth control measures is considered to be highly effective– **Sterilisation techniques**
- The most widely accepted method of contraception in India at present– **Intra uterine devices**
- Full method of contraception is– **Sterilisation**
- Multiload intrauterine device contains– **Copper**
- Side effects of ____ contraceptive method are almost nil– **Coitus interruptus**
- Best contraceptive measure in males is– **Condom**
- The hormone stimulate milk production and secretion and participates in control of reproduction– **Prolactin**
- _____ induces the lactational amenorrhea– **Increased level of prolactin**
- WHO stands for– **World health organization**
- 'Saheli' a new oral contraceptive developed by– **Central Drug Research Institute**
- The marriageable age for the females and males respectively in India is– **18, 21**
- The contraceptive also provides protection from contacting STDs and AIDS– **Condoms**
- The groups of contraceptives are included under barrier methods– **Condom, Diaphragm, Cervical caps, Vaults**
- IUDs stands for– **Intra Uterine Devices**
- _____ ions plays an effective role in the activity of IUDs– **Copper**
- MTP was legalised in India– **1971**
- Diseases which are transmitted through sexual intercourse are– **STD/VD/UTI**
- Hepatitis B is transmitted through– **Blood transfusion, Intimate physical contact and Sexual contact**

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- The natural ways of avoiding chances of fertilization is– **Natural methods of contraception**
- The coitus interruptus method shows very high failure rate– **Initial secretion in male, may also contain sperms**
- Mechanism of action of oral contraceptive pills is– **Prevents ovulation**
- GIFT technique is used in– **Sterile female**
- An ideal contraceptive should be– **User-friendly, Easily available and Effective and reversible with no or least side effects**
- The natural methods of birth control is– **By abstaining from coitus from day 10 to 17 of menstrual cycle**
- India's population crossed 1 billion in– **May 2000**
- The family planning programme in India were initiated in– **1951**
- The copper ions of IUDs– **Suppress the motility and fertilization capacity of sperms**
- Progestasert and LNG-20 are– **Hormone relating IUDs**
- Most widely accepted method in India– **IUD's**
- Saheli, a new oral contraceptive, for the females developed by Indian scientists is a– **Non-steroidal preparation**
- In periodic abstinence method, coitus avoid from– **10 to 17 days**
- ……Natural method has maximum chances of failing– **Periodic abstinence**
- …… prevent the spread of STD's– **Condom**
- Copper releasing IUD's are– **Cu 7, Multiload 375**
- Hormone releasing IUD's are– **Progestasert**
- Function of IUD's– **Increase phagocytosis of sperm, Inhibit fertilization**
- Function of copper releasing IUD's is– **Inhibit fertilization**
- Function of pills– **Inhibit ovulation**
- …… Hormones is present in OCD– **Progesterone, Estrogen**
- CuT is an intrauterine contraceptive device. Function of Cu ions is– **Cu ions suppress sperm motility and the fertilizing capacity of the sperms**
- Spermicidal creams, jellies and foams are usually used along with the barrier methods to– **Increase their contraceptive efficiency**
- Progestogen-estrogen pills helps in preventing pregnancy by not allowing– **Ova formation, Implantation**
- The birth control device used by women are– **Copper T**
- Periodic abstinence is a method in– **Coitus is avoided for a particular duration**
- Implants under the skin, when used as contraceptive method– **Provide longer effective period**
- When …… surgical interventions are done for contraceptive purpose, they act by– **Blocking gamete transport**
- Insertion of IUDs within 72 hrs of coitus, to avoid possible pregnancy due to rape or unprotected intercourse is termed as– **Emergency contraception**
- Emergency contraceptives are effective if used within– **72 hours of coitus**
- Vaults prevent conception by– **Blocking the entry of sperms**
- Disadvantage of IUD is that– **The devices are expelled out without the knowledge of wearers**
- Work of progesterone which is present in oral contraceptive pills– **To inhibit ovulation**

3.3 Medical Termination of Pregnancy

- Assisted reproductive technology, IVF involves transfer of– **Zygote into the fallopian tube**
- The diaphragm, cervical cap and vaults are– **Reusable contraceptives**
- Delaying pregnancy or spacing children the ideal contraceptive is– **IUD (Intra Uterine Device)**
- A weekly oral contraceptive is– **Saheli**
- MTPs are considered safe up to how many weeks of pregnancy– 12
- Government of India legalized MTP in the year– **1971**
- MTP stands for– **Medical termination of pregnancy**

3.4 Sexually Transmitted Diseases

- The groups includes all sexually transmitted diseases– **Gonorrhoea, hepatitis-B, Chlamydiasis**
- From the sexually transmitted diseases mentioned below, identify the one which does not specifically affect the sex organs– **AIDS**
- STDs related to– **Pelvic inflammatory disease**
- Diseases that is not completely curable– **HIV infection and Genital Herpes**
- …. will not be useful at a prevention in acquiring STDs– **Use of oral pills**

3.5 Miscellaneous

- Embryo with more than 16 blastomeres formed due to in vitro fertilisation is transferred into– **Uterus**
- The test-tube baby programme employs which one of the techniques is– **Zygote intra fallopian transfer (ZIFT)**

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- IVF followed by ET is called– **Test-tube baby programme**
- ART is– **IUDs, GIFT, ZIFT**
- Artificial introduction of sperms of a healthy donor into the vagina– **Artificial insemination means.**
- Though all persons are vulnerable to STIs, their incidences are reported to be very high among persons in the age groups of– **15-24 years**
- Sexually transmitted infections is/are not completely curable– **AIDS, Genital herpes, Hepatitis-B**
- Complications due to various STIs may lead to pelvic inflammatory diseases, still births.– **Ectopic pregnancies.**
- The groups includes sexually transmitted infections is– **Gonorrhoea, hepatitis-B, chlamydiasis**
- X is an incurable STI in ..... itching, pain and swellings in the genital region occurs. Its name is– **Genital herpes**
- Blood transfusion, Infected mother to fetus, Sexual contact transmitted through– **Hepatitis B.**
- The common means of transmission of AIDS is– **Sexual intercourse, Blood transfusion, Placental transfer**
- The technique called Gamete Intra Fallopian Transfer (GIFT) is recommended for those females– **Who cannot produce an ovum**
- The technique that will be suitable for fertilisation where the male is having a very low sperm count– **Artificial insemination**
- _____ is include a number of special techniques which assist infertile couples to have children– **Assisted reproductive technologies (ART)**
- Improved programmes covering wider reproductive-related areas are currently in operation under the popular name– **RCH programmes**
- Amniocentesis involves the analysis of– **Amniotic fluid**
- Implants under the skin and injections are also used as contraceptive device. These device has– **Progestogen-estrogen combination**
- Amniocentesis is employed for determining– **Hereditary abnormally in embryo**
- In vitro fertilisation is a technique that involves transfer of _____ into the fallopian tube– **Either zygote or early embryo upto 8 cell stage**
- The action of SAHELI is– **Releasing progesterone prevents implantation**
- The permissible use of the technique amniocentesis is for– **Detecting any genetic abnormality**
- The technique called gamete intrafallopian transfer (GIFT) is recommended for those female– **Who cannot produce an ovum**
- Egg implantation for in vivo fertilization is– **GIFT (Gamete Intra Fallopian Transfer)**
- Tying up or removing a small part of fallopian duct is called– **Tubectomy**
- In ZIFT method, there is– **Transfer of zygote or early embryo upto 8 blastomeres**
- Method of birth control is– **IUD's**
- Full form of the GIFT– **Gamete Intra Fallopian Transfer**
- Artificial Insemination means– **Artificial introduction of sperms of a healthy donor into the vagina**
- If male is impotent and female is normal then which of the technique can be used– **AI**
- In vitro fertilization different from natural fertilization in humans– **In vitro fertilization happens outside the body**
- IVF involves transfer into fallopian tube of– **Zygote or embryo upto 8-celled stage**
- The method of directly injecting a sperm into ovum is assisted by reproductive technology is called– **ICSI**
- A national level approach to build up a reproductively healthy society was taken up in our country in– **1950s**
- Surgical procedure as a contraceptive method is– **Vasectomy**
- Lippe's loop is a type of contraceptive used as– **Non-Medicated IUD**
- The embryos are transferred to assist those females that cannot conceive, the techniques are– **ZIFT and IUT**
- All sexual transmitted diseases– **Gonorrhoea, Syphilis, Genital herpes**
- Progestogens alone or in combination with estrogens can be used as a contraceptive in the form of– **Pills, injections and implants**
- The hormone-releasing Intra-Uterine devices– **Progestasert, LNG-20**
- Sexually transmitted diseases is not completely curable– **Genital herpes**
- Contraceptive methods do involve a role of hormone– **Lactational amenorrhea, Pills, Emergency contraceptives**
- The contraceptive 'SAHELI' – **Blocks estrogen receptors in the uterus, preventing eggs from getting implanted**

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EXAM POINT

Reproductive Health-Difficulty and strategies		
Hysterectomy is surgical removal of–	**Uterus**	**AIPMT-2015**
Auxetic growth is seen in–	**Rotifers, Nematodes, Tunicates**	**CMC Vellore-2013**
Population Explosion		
Multiload 375 is–	**An intra uterine device**	**AP EAPCET-10.05.2023, Shift-II**
Phenonmenal and rapid increase of population in a short period is called–	**Population explosion**	**J&K CET-2009**
When members of a population attain sexual maturity at different times preventing inter-breeding, it is termed as____isolation.	**Seasonal**	**MHT CET-2017**
One of the causes population explosion is–	**Decrease in death rate, maternal mortality rate and infant mortality rate**	**Karnataka CET-2014**
The sex ratio in India in 2000 stands–	**1000 males per 960 females**	**Rajasthan PMT-2001**
Methods of Birth Control		
The new oral contraceptive named Saheli for female was developed by the scientists of–	**CDRI, Lucknow**	**VMMC-2011**
Oral contraceptive pill is composed of–	**Estrogen and progesterone**	**AP EAMCET-25.04.2018 Shift-I / BVP-2002 WB JEE-2012**
Oral contraceptive pills help in birth control by–	**Preventing ovulation**	**Tripura JEE-2021, 2017, DUMET-2010, 2008**
Permanent contraception in human male is called–	**Vasectomy**	**UP CPMT-2012**
One of the side-effect of the use of anabolic steroids in females–	**Masculinisation**	**Karnataka CET-2022**
The hormone releasing IUD is–	**LNG 20**	**Karnataka CET-20.05.2023 GUJCET-2022 / NEET-2021, Kerala PMT-2015 / AIPMT-2014, J&K CET-2013**
Family planning program was launched in–	**1952**	**JCECE-2018 / Karnataka CET-2017**
Cu-T prevents pregnancy by preventing–	**Fertilization**	**AFMC-2010**
Purpose of tubectomy is to prevent–	**Fertilization**	**BCECE-2003**
Most important component of oral contraceptive is–	**Progesterone**	**JIPMER-2011 / Punjab MET-2010 / BCECE-2003**
Lippe loop is a type of contraceptive used as–	**Non-Medicated IUD**	**NEET-2022**
Oral contraceptive pills help in birth control by–	**Preventing ovulation**	**AIIMS-2009**
Saheli is an oral contraceptive pill that has very high contraceptive value with little side effects. It is because–	**It contains centchroman**	**AIIMS-2014**
The contraceptive devices make uterus unsuitable for implantation–	**Progestasert**	**AIIMS-2013**
One of the physical barrier in females–	**Vaults**	**TS EAMCET-09.08.2021 Shift-I**
The mechanical barrier that used in birth control is–	**Diaphragm**	**Karnataka CET-2004**

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Cu ions released from copper-releasing Intra Uterine Devices (IUDs)– **Suppress sperm motility**	**AIPMT (Screening)-2010**
The control for human population methods can be used, such as– **Estrogen + Progesterone, IUCD and MTP, Tubectomy and Vasectomy**	**JIPMER-2012**
Depo-provera refers to– **Injectable contraceptive**	**JIPMER-2015**
The contraceptives that could be effective in avoiding pregnancy if used within 72 hours after casual unprotected intercourse– **Progestogen – Estrogen combination**	**Karnataka CET-2020**
IUDs, …… are used by female. **Release copper ions in the uterus that increase phagocytosis of sperms**	**Karnataka CET-2014**
The birth control measure that can be considered as the safest– **Sterilization techniques**	**Karnataka CET-2006**
_____ is natural category of contraceptive method. **Coitus interrupts**	**GUJCET-2020**
Multiload 375 is _____ type of IUDs. **Cu releasing**	**GUJCET-2020**
The birth control pill contains– **Progesterone and estrogen**	**MHT CET-2017**
The sterilization procedure in human female is– **Tubectomy**	**MHT CET-2016**
The technique used to block the passage of sperm in male– **Vasectomy**	**MHT CET-2014**
The hormonal method for birth control is– **Contraceptive Pill**	**AMU-2014**
With regard to Birth control methods in humans DMPA stands for– **Contraceptive injection**	**TS EAMCET-15.05.2016**
Progestasert is an IUD which makes the uterus unsuitable and cervix hostile to the sperms as they are– **Hormone releasing IUDs**	**Karnataka CET-2015**
Surgical removal of testes is termed as– **Castration**	**Rajasthan PMT-2001**
CuT, LNG-20 and Cu7 are examples for– **Intrauterine device (IUDs)**	**Kerala PMT-2013**
Sexually Transmitted Diseases (STDs)	
In HIV infection, number of these cells progressively decrease in human beings– **T_H-cells**	**AP EAPCET-10.05.2023, Shift-II**
The sexually transmitted infections that are completely curable– **Syphilis and Trichomoniasis**	**RE-NEET (UG)-06.06.2023 (Manipur)**
The blood corpuscles, that the HIV undergoes replication and produces progeny viruses is– **T_H cells**	**NEET (UG) 07.05.2023**
The common sexually transmitted diseases that is completely curable when detected early and treated properly– **Gonorrhoea**	**NEET (UG) 07.05.2023**
The sexually transmitted bacterial disease is– **Syphilis**	**Tripura JEE-2018 / CG PMT-2005 / BVP-2002**
The organisms causes that the sexual disease syphilis is– **Treponema pallidum**	**KVPY SA-2016 / Haryana PMT-1999 / AMU-1999**
Gonorrhoea, Hepatitis-B, Chlamydiasis are – **Sexually transmitted diseases**	**NEET-2020 Phase-I, NEET-2020 Phase-II, AMU-2012**
It is a disease which mainly affects mucous membrane of urinogenital tract. In males, burning feeling on passing urine, after a yellow discharge occurs, that is accompanied by fever, headache and feeling of illness is– **Gonorrhea**	**AMU-2012**
Direct contact, i.e. person to person direct or intimate contact is necessary for, the diseases is– **Syphilis**	**CMC Ludhiana-2015**
Hepatitis-B is also called– **Serum jaundice**	**BCECE-2003**

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The sexually transmitted diseases that is not completely curable– **Genital herpes**	**NEET-2019**
The sexually transmitted diseases that do not specifically affect reproductive organs– **AIDS and Hepatitis B**	**NEET (Odisha)-2019**
Genes for cytoplasmic male sterility in plants are generally located in– **Mitochondrial genome**	**AIPMT-2003**
The sexually transmitted disease, that can affect both the male and the female genitals and may damage the eyes of babies born of infected mothers is– **Gonorrhoea**	**Karnataka CET-2012**
A sexually transmitted disease symptomised by the development of chancre on genitals is caused by the infection of– **Treponema pallidium**	**Karnataka CET-2008**
The T-cells that are destroyed by HIV is– **Helper T-cells**	**Uttarakhand PMT-2011**
Treponema pallidum is responsible for– **Syphilis**	**Tripura JEE-2017**
The appearance of chancre, rashes all over the body are the symptoms of– **Syphilis**	**Karnataka CET-2013**
Human Papilloma virus causes– **Cervical cancer**	**AP EAMCET-24.04.2019 Shift-I**
Gonorrhoea is caused by– **Neisseria gonorrhoeae**	**Manipal-2005**

Medical Termination of Pregnancy (MTP)

MTPs are considered relatively safe during– **First trimester of pregnancy**	**Karnataka CET-20.05.2023**
A process to determine any genetic disease of the embryo is known as – **Amniocentesis**	**Karnataka CET-2022 / TS EAMCET-10.08.2021 Shift-I, TS EAMCET-28.09.2020 Shift-II, TS EAMCET-08.05.2019 Shift-I, TS EAMCET-02.05.2018 Shift-II, Karnataka CET-2016 / VMMC-2014, AMU-2003 / JIPMER-2002**
Technique to know the sex congenital diseases and metabolic disorders is known as– **Amniocentesis**	**AMU-1998**
The test which is misused for identification of an unborn baby is– **Amniocentesis**	**J&K CET-2007**
Capacitation refers to changes in the– **Sperm before fertilization**	**AIPMT-2015**
The permissible use of the technique amniocentesis is for – **Detecting any genetic abnormality**	**AIPMT (Screening)-2010**
Medical Termination of pregnancy (MTP) is considered safe up to how many weeks of pregnancy– **Twelve weeks**	**AIPMT (Screening)-2011**
In amniocentesis technique, which is used for biochemical assay to examine fluid karyotypically and to detect hereditary and chromosomal disorders in growing foetus by pathologist– **Amniotic fluid, Exfoliated foetal cells**	**UP CPMT-2014**
Oral contraceptives are prescribed in females to check– **Ovulation**	**J&K CET-2004**
In MOET (Multiple Ovulation and Embryo Transfer) at which cell stage embryos are recovered non-surgically and transferred to surrogate mother– **8 - 32**	**TS EAMCET-02.05.2018 Shift-II**
In birth control methods, an Uterine Device is– **LNG-20**	**TS EAMCET-2015**

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Foetal sex can be determined by examining cells from the amniotic fluid by looking for– **Barr bodies**	**Assam CEE-2014**
High frequency sound waves are used in – **Ultrasonography**	**JCECE-2014, 2012**
Non-invasive technique of genetic counseling is– **Ultrasonography**	**J&K CET-2001 / AMU 1996**

Infertility and Test Tube Baby Programme

Test tube baby implies– **Fertilisation in test tube and development in uterus**	**BVP-2010, JIPMER-1999, AIPMT-1996**
The cell stage a blastula that can be implanted in uterus in test tube baby development– **32 cell**	**Rajasthan PMT-1996 / VMMC-2014, Rajasthan PMT-2009 / UP CPMT-2009**
In the production of test tube babies– **Fertilization is external and foetus formation is internal**	**Karnataka CET-2002**
The technique advised by a doctor to overcome the problem of infertility– **ART**	**Karnataka CET-2022**
The first case of IVF-ET technique success, was reported by– **Patrick Steptoe and Robert Edward**	**Karnataka CET-2003**
Intra Ovarian Fertilisation (IOF) means fertilization– **By putting pollens directly into ovary-wall**	**Manipal-2013**
A childless couple can be assisted to have a child through a technique called GIFT. The full form of this technique is– **Gamete intra fallopian transfer**	**AP EAPCET-12.07.2022 Shift-I AIPMT (Re-Exam)-2015**
Assisted reproductive technology, IVF involves transfer of– **Zygote into the fallopian tube**	**AIPMT-2014**
The process in which artificial introduction of sperms of healthy donor into the vagina is called – **Artificial insemination**	**NEET-2013**
The signals for parturition originate from – **Placenta as well as fully developed foetus**	**AIPMT (Screening)-2010**
The technique called gamete intrafallopian transfer (GIFT) is recommended for those females– **Who cannot produce an ovum**	**AIPMT (Mains)-2011**
The stage transferred into the uterus after induced fertilization of ova in the laboratory is– **Morula**	**NEET (Karnataka)-2013**
In coelomates the problem of diffusion of food from gut to tissues is solved by– **Developing a circulatory system**	**Manipal-2009**
Intermediate community between pioneer and climax communities is called– **Seral community**	**Rajasthan PMT-2011**
The name of Norman Borlaug is associated with– **Green Revolution**	**AIPMT-2005**
The ART method more than 8 blastomeres that are transferred into the uterus to complete its further development– **IUT**	**GUJCET-2022**
The most infertility problems are generally due to– **Inadequate sperm production, Failure of ovulation**	**Tripura JEE-2017**
The method of directly injecting a sperm into ovum is called– **ICSI**	**Karnataka CET-2021, JIPMER-2017**
Surrogate mother is used for– **Future mother with transplanted embryo**	**BVP-2000**
Testicular Sperm Aspiration (TESA) technique involves– **Collection of sperms from the testis surgically**	**MGIMS Wardha-2015**
The female that develops the offspring of another one in its womb is – **Surrogate mother**	**TS EAMCET-02.05.2018 Shift-I**

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04.

PRINCIPLES OF INHERITANCE AND VARIATION

4.1 Mendel's Law of Inheritance

- How many true breeding pea plant varieties did mendel select as pairs, which were similar except in one character with contrasting traits– **14**
- Among the seven pairs of contrasting traits in pea plant as studied by Mendel, the number of traits related to flower, pod and seed respectively were– **2, 2, 2**
- The colour based contrasting traits in seven contrasting pairs, studied by Mendel in pea plant were– **3**
- ..... pairs of contrasting traits were studied by Mendel in pea plant– **7**
- Some of the dominant traits studied by Mendel were– **Violet flower colour, green pod colour and round seed shape**
- In Mendelian genetics _____ is the dominant– **Green colour of pods**
- Genes _____ code for a pair of contrasting traits– **Alleles**
- Mendel selected how many true breeding pea plant– **14**
- Genotype is– **Genetic composition of an individual**
- Characters are control by discrete unit called– **Factors**
- Some of the dominant traits studied by Mendel were– **Violet flower colour, green pod colour, round seed shape**
- An organism with two identical alleles is– **Homozygous**
- In Mendel's experiments, colour of seed coat, nature of flower, position of flower, colour of pod, height of stem, are called– **Phenotype**
- The unit of inheritance– **Gene**
- Gregor Mendel conducted hybridization experiments for– **Seven years (1856–1863)**
- The reason for Mendel's success was– **Traits chosen by him had genes far apart so that linkage was absent**
- Genetics deals with– **Heredity and variations**
- Heterozygous purple flower is crossed with recessive white flower. The progeny has the ratio– **50% purple and 50% white**
- A cross between the heterozygous F_1 hybrid and the double recessive homozygous parent is known as– **Test cross**

4.2 Inheritance of One Gene

- A tall true breeding garden pea plant is crossed with a dwarf true breeding garden pea plant. When the F_1 plants were selfed the resulting genotypes were in the ratio of– **1 : 2 : 1 : : Tall homozygous : Tall heterozygous : Dwarf**
- A child with mother of A blood group and father of AB blood group will not have the blood group– **O**
- ABO blood grouping in human beings cites the example of– **Co-dominance, Multiple allelism**
- On crossing two heterozygous tall plants (Tt), a total of 500 plants were obtained in F_1 generation. What be the respective number of tall and dwarf plants obtained in F_1 generation– **375, 125**
- ..... the probability of production of dwarf offsprings in a cross between two heterozygous tall pea plants– **25%**
- A tobacco plant heterozygous for a recessive character is self-pollinated and 1200 seeds are subsequently germinated. How many seedilings would have the parental genotype– **600**
- To determine the genotype of a tall plant of F_2 generation, Mendel crossed this plant wih a dwarf plant. This cross represents a– **Test cross**
- Mendel formulated the law of purity of gametes on the basis of– **Monohybrid cross**
- In Antirrhinum (dog flower), phenotypic ratio in F_2 generation for the inheritance of flower colour would be– **1 : 2 : 1**

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- Phenotypic and genotypic ratio is similar in case of– **Incomplete dominance**
- ..... code for a pair of contrasting traits of same gene– **Alleles**
- A recessive allele is expressed in– **Homozygous condition only**
- The characters ..... appear in the first filial generation are called– **Dominant characters**
- In *Mirabilis jalapa*, the percentage of plants having pink and red flowers would be _____ when pink flower plant is test crossed– **50% pink & 0% red**
- In a certain taxon of insects some have 17 chromosomes and the other have 18 chromosomes. The 17 and 18 chromosomes bearing organisms are– **Male and females, respectively**
- The percentage inheritance of a disorder from an X-linked diseased father to his son will be– **0%**
- A colourblind female marries a normal male (XY)– **All the sons are colourblind**
- The ratio between carrier, disease free & diseased individual on marriage between two carriers of sickle cell anaemia will be– **2 : 1 : 1**
- The frequency of pure round seeded pea plants in F_1 generation of a dihybrid cross is– **4/16**
- _____ types of gametes are produced from individual of AABBCcDdee genotype– **4**
- Test cross in plants or in Drosophila involves crossing– **The F_1 hybrid with a recessive trait**
- Dug flower plant is also known as– **Snapdragon, Antirrhium**
- A man with blood group 'A' marries a woman with blood group 'B', the possible blood groups of their offsprings– **A, B, AB and O**
- Mendel work got rediscovered in– **1900**
- Rediscovered the Mendel work by– **De Vries, Correns, Von Tschermark**
- Hybrid of pure red flowered and white flowered pea is crossed to pure red flowered plant. The progeny shall be– **Red flowered**
- When both alleles express their effect on being present together, the phenomenon is called– **Co-dominance**
- A heterozygous tall plant is selfed. It produces both tall and dwarf plant. This confirms the Mendel's law called as– **Law of segregation**
- Example of incomplete dominance– **Snapdragon, Dog flower, Antirrhinum sp.**
- The ratio of genotypic and phenotypic are same in– **Incomplete dominance**
- Examples of co-dominance is– **Human blood group**
- Punnett square is used to know– **Probable result of a cross**
- In a monohybrid cross between two heterozygous individuals, percentage of pure homozygous individuals obtained in F_1 generation is– **50%**
- Crosses will give tall and dwarf plants in same proportions– **Tt × tt**
- Types of gametes can be produced by a diploid organism is heterozygous for 4 loci– **16**
- Test cross is a cross between– **Hybrid × Recessive parent (Tt × tt)**
- Monohybrid ratio is– **3 : 1**
- A cross between F_1 hybrid and a recessive parent (Tt × tt) gives a ratio of– **1 : 1**
- Multiple alleles are characterized by– **More than two alternate forms of a gene found at same locus**
- Genes located on same locus but having different expression are– **Multiple alleles**
- A recessive trait in garden pea is– **Wrinkled seeds**
- Multiple alleles control inheritance of– **Blood groups**
- A gamete normally contains– **One allele of a gene**
- Children have A and B types of blood, the blood types of parents is– **AB and O**
- The cross used to test whether an individual is homozygous (pure) or heterozygous (hybrid) is called– **Test cross**
- Possible blood groups of children born to parents having A and AB group are– **A, B, AB**
- Human blood grouping is ABO instead of ABC because O in it refers to– **No antigen A or B on RBCs**
- Monohybrid test cross ratio is– **1 : 1**
- In Punnett square, the possible gametes are written on two sides, usually the– **Top row and left columns**
- An allele is dominant if it is expressed in both– **Homozygous and Heterozygous states**

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4.3 Inheritance of Two Genes

- In a cross between a male and female, both heterozygous for sickle cell anaemia gene, what percentage of the progeny will be diseased– **25%**
- If a colour-blind man marries a woman who is homozygous for normal colour vision, the probability of their son being colour-blind is– **0**
- Mendel's law of independent assortment holds good for genes situated on the– **Homologous chromosomes**
- Experimental verification of 'chromosomal theory of inheritance' was done by– **Morgan et al**
- Genes located very close to one another on same chromosome tend to be transmitted together and are called– **Linked genes**
- True about the crossing over between linked genes– **Hardly any crossing over**
- Chromosome maps/genetic maps were first prepared by– **Sturtevant (1911)**
- Statements is not true for two genes that show 50% recombination frequency– **The genes are tightly linked**
- Mendel's law of independent assortment does not hold true for the genes that are located closely on– **Same chromosome**
- If linkage was known at the time of Mendel then which of the laws, he would not have been able to explain– **Law of independent assortment**
- In Mendelian dihybrid cross, when heterozygous round yellow are self crossed, round green offspring are represented by the genotype– **Rryy, RRyy**
- Types of kinds, gametes can be produced by a diploid organism who is heterozygous for 4 loci– **16**
- Law of independent assortment can be explained with the help of– **Dihybrid cross**
- _____ different kinds of gametes will be produced by a plant having the genotype AABbCC– **Two**
- A diploid organism is heterozygous for 3 loci, ____ types of gametes produced– **8**
- A marriage between a colourblind man and a normal woman produces– **All carrier daughters and normal sons**
- A man whose father was colour blind marries a woman who had a colourblind mother and normal father, percentage of male children of this couple will be colourbilind– **50%**
- A women has an X-linked condition on one of her X chromosomes. This chromosome inherited by– **Both sons and daughters**
- All genes located on the same chromosome– **Form one linkage group**
- The term 'linkage' coined by– **T.H. Morgan**
- Homozygous plants for both dominant characters in F_2 of a dihybrid cross, the ratio of– **1/16**
- Mendel's law of independent assortment is based on F_2 ratio of– **9 : 3 : 3 : 1**
- The percentage of ab gamete produced by AaBb parent will be– **25%**
- Plant YyRr is self pollinated, the result will– **9 : 3 : 3 : 1 ratio of phenotypes only**
- Percentage of heterozygous individuals obtained from selfing of Rr individuals is– **50**
- F_2 generation is produced by– **Selfing the progeny of two individual parents**
- Ratio 9 : 3 : 3 : 1 is due to– **Dihybrid cross**
- Polygenes show– **Different phenotypes**
- Genotypic ratio of a dihybrid cross is– **1 : 2 : 2 : 4 : 1 : 2 : 1 : 2 : 1**
- Number of gamete types formed by AaBbCc individual/heterozygous for three gene loci is– **8**
- The ratio of 9 : 3 : 3 : 1 is due to– **Independent assortment of genes**
- Chromosomal theory of inheritance is proposed by– **Sutton and Boveri**
- A dihybrid ratio of 1 : 4 : 6 : 4 : 1 is obtained instead of 9 : 3 : 3 : 1. This is an example of– **Polygenic inheritance**
- Morgan worked on drosophila because– **Short life span, Production of many offspring by single mating**
- According to the law of independent assortment in a dihybrid cross– **There is a single individual which is homozygous recessive for both the characters**
- For finding the different types of gametes produced by genotype AaBb, it should be crossed with genotype– **aabb**
- Phenomenon of an allele of one gene suppressing the activity of allele of another gene is called– **Epistasis**
- Source of mendelian recombinations is– **Independent assortment**
- Behaviour of chromosome was shown by– **Walter Sutton**
- When non - parental gene combine with itself; termed as– **Recombination**

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- The parental gene combine with itself; termed as– **Linkage**
- Genetic map is one that– **Establishes sites of genes on a chromosome**
- Linkage in plants was first shown in– **Lathyrus odoratus**

4.4 Polygenic Inheritance and Pleiotropy

- In polygenic inheritance– **Many genes govern a single character**
- A pleiotropic gene– **Controls multiple traits in an individual**
- The gene disorder phenylketonuria is an example for– **Pleiotropy**
- Genes with multiple phenotypic effects are known as– **Pleiotropic genes**
- Pleiotropic gene has– **Multiple phenotype**
- A polygenic inheritance in human beings is– **Skin colour**
- Occasionally, a single gene may express more than one effect. This is– **Pleiotropy**
- Skin colour in humans is regulated by– **3 dominant and 3 recessive genes**
- Phenylketonuria is caused by mutation in the gene that codes for the enzyme– **Phenylalanine hydroxylase**
- …….different kinds of gametes will be produced by a plant having the genotype AABbCC– **Two**
- Inheritance of skin colour in human beings is an example of– **Polygenic Quantitative inheritance**

4.5 Sex Determination

- XO type of sex determination can be found in– **Grasshoppers**
- XO type of sex determination and XY type of sex determination are the examples of– **Male heterogamety**
- A couple has six daughters. What is the possibility of their having a girl next time– **50%**
- Number of autosomes present in liver cells of a human female is– **22 pairs**
- In XO type of sex determination– **Males produce two different types of gametes**
- An unfertilized egg in honeybees develops as a drone by means of– **Parthenogenesis**
- Male heterogamy is shown by– **Grasshopper, Human being**
- Female heterogamy is shown by– **Birds**
- Grasshopper in is an example of XO type of sex determination in which the male have– **One X chromosome**
- Haplodiploidy is found in…….. **Honeybees, ants and wasps**
- Segregation of Mendelian factors (no linkage, no crossing over) occurs during– **Anaphase I**
- Grasshopper is an example of– **XO type of sex determination**
- In human beings, 45 chromosomes/single X/XO abnormality causes– **Turner's syndrome**
- An autosome is– **Chromosome other than sex chromosome**
- In Drosophila, the sex is determined by– **The ratio of number of X–chromosomes to the sets of autosomes**
- A colour blind man (X^CY) has a colour blind sister (X^CX^C) and a normal brother (XY). Genotype of father and mother is– **X^CY, X^CX**
- The most suitable medium for culture of Drosophila melanogaster is– **Ripe Banana**
- Sex chromosomes of a female bird has been designated as– **Z and W**
- In honeybee, the sex is determined by– **Whether the egg is fertilized or develops parthenogenetically**

4.6 Mutation

- Change in genotype which may result in new expression of a characteristic is a– **Mutation**
- Insertion or deletion of a single base causes– **Frame-shift mutation**
- Rate of mutation is affected by– **X-rays, Temperature, Gamma rays**
- Classic example of point mutation is – **Sickle-cell anemia**
- Gene mutations is caused by– **Changes in sequence of nitrogenous bases**
- Mutations result in– **Death, Better varieties, Change in genetic constitution**
- Point mutation involves– **Change in single base pair**
- Loss or gain of a segment of DNA results in– **Chromosomal aberrations**
- Chromosomal aberrations are commonly observed in. The type of cells is known as– **Cancer cells**

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- A strong mutagen is– **X-ray**
- Shape of chromosomes is determined by position of– **Centromere**
- Aneuploidy is– **Gain or loss of a chromosome**
- Polyploidy is– **Increase in whole set of chromosome, Failure of cytokinesis after telophase stage**
- Total hereditary material outside the chromosome is called– **Plasmon**

4.7 Genetic Disorders

- Number of X-chromosome in Turner's syndrome is/are– **1**
- Klinefelter's syndrome is characterised by a karyotype of– **XXY**
- Father of a child is colourblind and mother is carrier for colourblindness, the probability of the child being colourblind is– **50%**
- A marriage between a colourblind man and a normal woman produces– **All carrier daughters and normal sons**
- Red green colourblindness is a sex linked trait. Which of the given statements is not correct regarding colourblindness– **Males can be carriers of the trait**
- If a haemophilic man marries a carrier woman then which of the holds true for their progenies– **50% daughters are carrier and 50% are haemophilic**
- The possibility of a female becoming haemophilic is extremely rare because mother of such a female has to be at least (i) and father should be (ii)– **(i) carrier, (ii) haemophilic**
- Result of a cross between a normal homozygous female and a haemophilic male would be– **Normal males and carrier females**
- The amino acid that is substituted in sickle cell anaemia– **Glutamic acid by valine in β-chain**
- An individual affected by phenylketonuria lacks an enzyme that converts the amino acid ..... into ..... **Phenylalanine, tyrosine**
- If both parents are carriers for thalassemia, which is an autosomal recessive disorder, what are the chances of pregnancy resulting in an affected child– **25%**
- That caused by recessive autosomal genes when present in homozygous condition– **Thalassemia, Phenylketonuria, Sickle cell anaemia**
- A genetic disease is transferred from phenotypically normal but carrier female is only some of the male progeny, the disease is– **Sex-linked recessive**
- Is sickle-cell anaemia, shape of RBCs under oxygen tension becomes– **Elongated and sickle shaped**
- A genetic disease is– **Phenylketonuria**
- The technique exployed in human genetic counselling is– **Pedigree analysis**
- The disease is an autosomal recessive– **Phenylketonuria, Sickle cell anemia**
- The pedigree of Queen Victoria disease is– **Haemophilia**
- Individual are affected by sickle cell anaemia is– **Hb^S Hb^S**
- Sickle cell anemia is– **Autosomal recessive trait**
- Sickle cell anemia is caused because of– **Substitution of glutamic acid by valine at 6th position of β- globin chain**
- Down syndrome is– **Presence of addition copy of chromosome number 21**
- Furrowed tongue, round head, broad palm, psychomotor are the symptoms of which disease– **Down syndrome**
- Turner's syndrome occurs in– **Female**
- Klinefelter's syndrome occurs in– **Male**
- Rudimentary ovary and lack of secondary sexual characters are symptoms of– **Turner's syndrome**
- In sickle - cell anaemia, shape of RBCs under oxygen tension becomes– **Sickle shape**
- Haemophilia is a genetic disorder in which– **Delayed coagulation of blood**
- Extra chromosome 'X' is present in which one of the following cases– **Klinefelter syndrome**
- Thalassemia is a/an– **Autosome-linked recessive disease**
- Dominant trait is a– **Rh^+ factor**
- Amino acid is substituted in sickle cell anaemia– **Glutamic acid by valine in β-chain**
- Haemophilic man marries a carrier woman. Percentage of daughters becoming haemophilic shall be– **50%**
- Colour blindness is due to one– **Recessive allele in males**
- Down's syndrome is due to– **Non disjunction of chromosomes**
- Klinefelter's syndrome has– **45 + XXY**

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- β-thalassemia is controlled by a single gene HBB on– **Chromosome 11**
- Ratio of heterozygous, homozygous and hemizygous in offsprings of a colour blind husband & a carrier wife– **1 : 1 : 1**
- Edward's syndrome characterized by mental deficiency is caused by trisomy of chromosome– **18**
- Pattern baldness, moustaches and beard in human males are examples of– **Sex limited traits**
- A genetic disease in many Africans which reduces the oxygen uptake by RBC is known as– **Sickle-cell anaemia**
- In sickle-cell anaemia, glutamic acid is replaced by valine. One of the the triplet codes for valine– **G U G**
- A colour blind daughter is born in case of– **Carrier mother, colour blind father**
- A colourblind man marries a woman with normal vision. The offspring will be– **All sons & daughters normal but daughters are carriers**
- Defect in amino acid metabolism may result in– **Phenylketonuria**
- A woman with normal vision, but whose father was colour blind, marries a colour blind man. Suppose that the fourth child of this couple was a boy. This boy– **May be colour blind or may be normal vision**
- Colour blindness is due to one– **Recessive allele in males**

4.8 Miscellaneous

- The trait that is controlled by sex linked recessive genes– **Haemophilia**
- Failure of segregation of chromatids during cell division results in the gain or loss of chromosomes, this is called– **Aneuploidy**
- Failure of cytokinesis after telophase stage of cell division results in an increase in a whole set of chromosomes in an organism. The phenomenon is called– **Polyploidy**
- All genes located on the same chromosome– **Form one linkage group**
- Conditions of a karyotype 2n + 1, 2n – 1 and 2n + 2, 2n – 2 are called– **Aneuploidy**
- Distance between the genes and percentage of recombination shows– **A direct relationship**
- If a genetic disease is transferred from a phenotypically normal but carrier female to only some of the male progeny, the disease is– **Sex-linked recessive**
- Person having genotype I^AI^B show the blood group as AB. This is because of– **Codominance**
- ZZ/ZW type of sex determination is seen in– **Peacock**
- A cross between two tall plants resulted in offspring having few dwarf plants. The genotypes of both the parents– **Tt and Tt**
- In a dihybrid corss, if you get 9 : 3 : 3 : 1 ratio it denotes that– **The alleles of two genes are segregating independently**
- In the F_1 generation of a Mendelian dihybrid cross the number of phenotypes and genotypes are– **Phenotypes-4, genotypes-9**
- The occurs due to the presence of autosome linked dominant trait– **Myotonic dystrophy**
- If a colour blind female marries a man whose mother was also colour blind, what are the chances of her progeny having colour blindness– **100%**
- The production for gametes by the parents, formation of zygotes, the F_1 and F_2 plants, can be understood from a diagram called– **Punnett square**
- In a cross between a male and female, both heterozygous for sickle cell anaemia gene, the percentage of the progeny will be diseased– **25%**
- Experimental verification of the chromosomal theory of inheritance was done by– **Morgan**
- The number of contrasting characters studied by Mendel for his experiments was– **7**
- The best example for pleiotropy is– **Phenylketonuria**
- An individual has an overall masculine development, gynaecomastia, and is sterile, the genetic disorder in– **Klinefelter's syndrome**
- The frequency of recombination between gene pairs on the same chromosome as a measure of the distance between genes was explained by– **Alfred Sturtevant**
- Inheritance of blood groups in humans, the characteristics represent – **Dominance, Co-dominance, Multiple dominance**
- A woman has an X-linked condition on one of her X chromosomes. This chromosome can be inherited by– **Both sons and daughters**

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EXAM POINT

Laws of Inheritance by Mendel	
When a tall pea plant crossed with dwarf pea plant the F_2 generation produced 390 tall and 130 dwarf plants, then the plants that will show Heterozygous condition is– **260**	**AP EAPCET-10.05.2023, Shift-II**
Name the Mendel's factors and pair of contrasting traits– **Genes and Alleles**	**AP EAPCET-23.05.2023, Shift-II**
Heterozygous tall plants were crossed with dwarf plants, then the percentage of dwarf plants produced in the next progeny– **50**	**AP EAPCET-23.05.2023, Shift-II**
F_1 generation resembles both the parents in this phenomenon is– **Co-dominance**	**AP EAPCET-11.05.2023, Shift-I**
The ratio of homozygous tall and dwarf plant in F_2 generation in monohybrid cross is– **1 : 1**	**AP EAPCET-22.05.2023, Shift-II**
The experimental material in Mendels experiment was– **Pisum sativum**	**AMU-2015 / J&K CET-2007**
During the experiments, Mendel called genes by the term– **Factors**	**AMU-2015**
Mendels principles rediscovered by– **Correns**	**UP CPMT-2010**
First geneticist, father of genetics was– **Mendel**	**MGIMS Wardha-2007, AIPMT-1991**
The gene controlling seven traits in pea studied by Mendel were later found to be located on the number of chromosomes– **Four**	**MGIMS Wardha-2014, AIPMT-2003**
A common test to find the genotype of a hybrid is– **Crossing of one F_1 progeny with recessive parent**	**Manipal-2012**
A gamete normally contains– **One allele of a gene**	**Karnataka CET-2002**
Mendel conducted hybridisation experiments on garden peas for– **7 years**	**J&K CET-2014**
The term gene was coined by– **Johannsen**	**VMMC-2013 / BHU PMT (Screening)-2009, Uttarakhand PMT-2009**
1 : 2 : 1 phenotypic and genotypic ratio is found in– **Blending inheritance**	**AMU-2011**
Genes exhibiting multiple effects are known as– **Pleiotropic genes**	**BCECE-2014**
The phenotypic variation is restricted to certain clear cut characteristics. This variation is commonly known as– **Qualitative inheritance**	**AMU-1998**
Genes are made up of– **Polynucleotides**	**Uttarakhand PMT-2009, BHU PMT-2002**
The term "allelomorphic" implies– **A pair of contrasting character**	**VMMC-2006 / CG PMT-2004**
The trait of garden pea studied by Mendel that was recessive feature is– **Green seed colour**	**CG PMT-2007 / Rajasthan PMT-2007, Uttarakhand PMT-2006 / AIPMT-2003**
The scientist that rediscovered Mendel's theory– **E Von Tschermak**	**CG PMT-2007**
Genetics deals with– **Heredity, Variation**	**Haryana PMT-2002**
The modified 15 : 1 phenotype ratio indicate– **Duplicate genes**	**JIPMER-1995**
Who introduced the term 'Heterosis' – **George Shull**	**AP EAMCET-2001**

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The colour based contrasting traits in seven contrasting pairs studied by Mendel in pea were– **3**	**AMU-2012**
Some of the dominant traits studied by Mendel were– **Violet flower color, green pod color, round seed shape**	**AMU-2012**
Among the seven pairs of contrasting traits in pea plant, studied by Mendel, the number of traits related to flower, pod and seed respectively was– **2, 2, 2**	**AMU-2012**
Mendel observed that certain characters did assort independently. Later researchers found it to be due to– **Linkage**	**CG PMT-2006**
Pure line breed refers to– **Homozygosity**	**Tripura JEE-2017 / MGIMS Wardha-2011, Punjab MET-2011 / AIIMS-2007**
Genes are responsible for the growth and differentiation in an organism through regulation of– **Translation and transcription**	**DUMET-2001**
Externally observable characters of an individual are called– **Phenotype**	**DUMET-2001**
A cell is heterozygous at three gene loci. Total number of different type of gamete can it form– **8**	**DUMET-2001**
An organism with two different alleles for a gene is – **Heterozygous for that trait**	**CG PMT-2010**
Natural selection acts on an organism's is– **Phenotype**	**CG PMT-2010**
Alternate forms of a gene is known as – **Alleles**	**AP EAMCET-24.09.2020 Shift-II, VMMC-2007 / Rajasthan PMT-2005**
Law of segregation of gametes was proposed by– **Mendel**	**HP CET-2012**
The branch of science related with improvement of mankind by genetics is– **Eugenics**	**BCECE-2002**
Mendel enunciated– **Three principles of inheritance**	**MGIMS Wardha-2013**
In Mendelian monohybrid cross, phenotypic ratio in F_2 is 3 : 1. Total number of gametes are formed in F_1 - generation– **Two types**	**MGIMS Wardha-2013**
The offsprings obtained by mating two pure strains having constrasting characters are called as– **Hybrids**	**MGIMS Wardha-2013**
Polyploidy leads to rapid formation of new species because of– **Development of multiple sets of chromosomes**	**Manipal-2006**
Terminal flower will produce in garden pea when crossed– **Aa × Aa**	**JIPMER-2013**
The differences between parents and offspring, among offsprings of the same parents and individuals of the same species are called– **Variations**	**MHT CET-06.10.2020 Shift-I**
The ratio for test cross in dihybrid experiment of Mendel is– **1 : 1 : 1 : 1**	**GUJCET-2018**
The type of gene that regulate sex-determination in spinach plant is– **Single gene**	**GUJCET-2015**
A condition where a certain gene is present in only a single copy in a diploid cell is called– **Hemizygous**	**Karnataka CET-2008**
The visual display of chromosomes arranged by size, shape and banding pattern is called as– **Karyotype**	**SRM JEEE-2019**
According to Mendelism the character which shows dominance– **Green pod colour**	**AIPMT-2000 WB JEE-2006**

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AA Bb Cc genotypes form total number of types of gametes is– **4**	**AIPMT-1998**
If Mendel might have studied 7 pairs of characters in a plant with 12 chromosomes instead of 14 then– **He could not have discovered independent assortment**	**AIPMT-1998**
A child has single kidney since birth. This variation is– **Negative meristic**	**VMMC-2005 / AMU-2004 / BVP-2003**
Differentiation of organs and tissues in a developing organism, is associated with– **Differential expression of genes**	**Rajasthan PMT-2010**
Biometric genetics deals with– **The inheritance of quantitative traits**	**AMU-2002**
The theory of random genetic drift was proposed by– **Sewall Wright**	**J&K CET-2011**
Light coloured peppered moth/Biston betularia gets changed to its darker carbonaria variety due to– **Mutation of single Mendelian gene for survival in smoke laden industrial environment**	**Uttarakhand PMT-2006**
In the F_2 generation of a dihybrid cross of homozygous parents, the number of genotypes and phenotypes will be respectively– **Phenotype -4; Genotype -9**	**MHT CET-01.10.2020 Shift-I**
In his seminal work on genetics, Gregor Mendel described the physical traits in the pea plant as being controlled by two factors' The term that is used to define these factors today– **Alleles**	**KVPY (SA)-2010**
The production of gametes by the parents, the formation of zygotes, the F_1 and F_2 plants, can be understood from a diagram called – **Punnet square**	**NEET (Odisha)-2019**
The period for Mendel's hybridization experiments is– **1856 - 1863**	**NEET-2017**
Crossing the F1 hybrid with a double recessive genotype is called – **Test cross**	**AIPMT-2006**
Phenotype of an organism is the result of– **Genotype and environment interactions**	**AIPMT-2006**
Genetic variation cannot be effectively brought by– **Amplification**	**JIPMER-2019**
Total number of different types of gametes will be formed by a pea plant with genotype TtYy is– **04**	**MHT CET-2017**
During hybridization offsprings with hybrid vigour superior to both parents are self- pollinated for few successive generations to get– **Homozygosity**	**MHT CET-2016**
The total number of types of gametes produced in a cross between a negro and albino parent is– **08**	**MHT CET-2014**
During meiosis, the alleles of the parental pair separate or segregate from each other. Total number of allele (s) are then transmitted to a gamete– **One**	**Kerala PMT-2011**
Allelic sequence variations where more than one variant (allele) at a locus in human population with a frequency greater than 0.01 is referred to as– **DNA polymorphism**	**Kerala PMT-2011**
The loss of a chromosomal segment is due to– **Deletions**	**Kerala PMT-2011**
Coined the term allele by– **Bateson**	**AP EAMCET-24.09.2020 Shift-II**
Genes were first artificially synthesized by– **Khorana**	**J&K CET-2005**
The three scientists who rediscovered the Mendels law were– **Hugo de Vries, Carl Correns and Tschermak**	**Rajasthan PMT-1997**
An example of sex-influenced inheritance is– **Baldness**	**Uttarakhand PMT-2010**
Meiosis in AaBb will produce gametes– **AB, aB, Ab, ab**	**JCECE-2004**

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Pea plants were more suitable than dogs for Mendels experiment, because– **Pea plants can be self fertilized**	**CMC Vellore-2011**
Mendel was successful in discovering the principles of inheritance as– **He did not encounter linkage between the genes for the characters he considered**	**J&K CET-2011**
In human being brown eye (B) is dominant over blue eye (b). A brown-eyed couple has a blue-eyed child. What are the possible genotypes of the couple– **Bb × Bb**	**AP EAMCET-24.09.2020 Shift-I**
Inheritance of one Gene	
Genotype of dominant trait of plant can be determined by crossing F_1 hybrid with the parent and the genotypic ratio is– **Homozygous recessive trait 1 : 1**	**AP EAPCET-22.05.2023, Shift-I**
When two mutations are located in the same functional unit or different functional units then it is confirmed by– **Complementation test**	**WB JEE-2006**
If a child is of blood group -O and his father is of blood group -B, the genotype of father will be– **I^oI^B**	**VMMC-2011**
If a cross is made between AA and aa, the nature of F_1 progeny will be– **Genotypically Aa, phenotypically A**	**UP CPMT-2004**
A woman with straight hair marries a man with curly hair who is known to be heterozygous of the trait. What is the chance that their first child will have curly hair– **One in two**	**CMC Vellore-2013, BCECE-2011**
The percentage of heterozygous individuals obtained from selfing Rr individual, is– **50**	**BCECE-2011**
When a negro marries white, total number of phenotypes are obtained– **7**	**VMMC-2013**
In pigs, white coat (W) is dominant to black (w). Two white pigs are breed to procedure 9 white and 2 black pigs. The genotype of the parents is– **Ww × Ww**	**AMU-2008**
In Mirabilis jalapa when two pink flowered plants were crossed with each other, the F2 generation produced 40 red, 80 pink and 40 white flowering plants. This is a case of– **Incomplete dominance**	**JIPMER-1995**
Extra nuclear inheritance is a consequence of presence of genes in– **Mitochondria and chloroplasts**	**CG PMT-2006**
The dominant among the wing sizes in Drosophila is– **Normal wings**	**MHT CET-07.10.2020 Shift-I**
The dominant epistasis ratio is– **12:3:1**	**JIPMER-2014**
In man, the blue eye colour is recessive to the brown eye colour. If the boy has brown eye and his mother is blue eyed, what would be the phenotype of his father– **Brown eye**	**Karnataka CET-2007**
F_2 generation in a Mendelian cross showed that both genotypic and phenotypic ratio are same as 1 : 2 : 1. It represents a case of– **Monohybrid cross with incomplete dominance**	**AIPMT (Screening)-2012**
A plant which lives on rocks under water with photosynthetic roots is– **Podostemom**	**AP EAMCET-2004**
A plant of F_1-generation has genotype "AABbCC". On selfing of this plant what is the phenotypic ratio in F_2-generation– **3 : 1**	**AIPMT-2002**

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The genotype of a husband and wife are AB & AO. Among the blood of their children, how many different genotypes & phenotypes are possible– **4 genotypes; 3 phenotypes**	**Karnataka CET-2021**
A self-fertilizing trihybrid plant forms– **8 different gametes and 64 different zygotes**	**AIPMT-2004**
A gene is said to be dominant if– **It is expressed both in homozygous and heterozygous condition**	**AIPMT-2002**
Cross between AaBB and aaBB will form– **1AaBB : 1aaBB**	**AIPMT-1990**
If a gene has four alleles, number of expected genotypes is– **10**	**TS EAMCET-29.09.2020 Shift-I**
Law of Dominance	
The characters that studied by Mendel in garden pea was found to be dominant is– **Green pod colour**	**Haryana PMT-2010, AFMC-2007**
In pea plants, yellow seeds are dominant to green. If a heterozygous yellow seeded plant is crossed with a green seeded plant, what ratio of yellow and green seeded plants would you expect in F_1 generation– **50 : 50**	**AIPMT-2007**
A tall plant was grown in nutrient deficient soil and remained dwarf, when it is crossed with dwarf plant, then– **All hybrid plants are tall**	**AP EAMCET-2011**
A homozygous red flower is crossed with recessive white. Red is dominant over white. The progeny in the F_1 generation will be– **All red**	**BVP-2004 VMMC-2006 / CPMT-2004 / AIIMS-2002**
Incomplete dominance is found in– **Antirrhinum majus**	**CG PMT-2005**
Law of Segregation	
A pea with white flower was crossed with another pea with white flower. When they selfed the F_2 - generation produced purple and white in the ratio of 9:7. The reason for the result is that– **It is a complementary factor**	**MGIMS Wardha-2014**
Mendel's principle of segregation means that the germ cells always receive– **One of the paired alleles**	**DUMET-2011,2010**
The best suited for co dominance is– **Both are dominance**	**DUMET-2008**
In order to find out the different types of gametes produced by a pea plant having the genotype AaBb, is should be crossed to a plant with the genotype– **aabb**	**JIPMER-2007**
The characteristic feature of Dog flower plant shows incomplete dominance– **Colour of the flower**	**GUJCET-2021**
Test cross is the cross between phenotypically dominant F_1 hybrid with– **Recessive parent**	**Assam CEE-2014**
AB blood group shows– **Codominance**	**JIPMER-2018**
One of the reasons why law of segregation of gametes is universally applicable, is– **Gametes are haploid in higher organisms**	**MHT CET-2019**
In order to know the genotype of a dominant phenotype. It is crossed with a recessive parent. The cross resulted in 50% of recessive phenotypes. The genotype of the dominant phenotype used in the test cross is– **Ww**	**TS EAMCET-03.05.2018 Shift-I**
Leaf colour in Mirabilis jalapa is an example of– **Non-Mendelian inheritance**	**DUMET-2006**

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Inheritance of Two Gene	
Mutation is more common when it is present in– **Dominant condition**	**Punjab MET-2009**
A man with blood group B marries a women with blood group A and their first child is having blood group B. What is the genotype of child– **I^B I^O**	**UP CPMT-2004**
A dwarf pea plant in which bolting has occurred is crossed with a tall pure pea plant. What will be the phenotypic ratio in F_1 generation– **100% tall plants**	**BHU PMT (Mains)-2009**
When a tall and red flowered individual is crossed with a dwarf and white flowered individual, phenotype of the progeny will be– **Heterozygous tall and red**	**BHU PMT-2001**
In a dihybrid cross between RRYY and rryy-parents, the number of RrYy genotypes in F_2 generation will be– **4**	**J&K CET-2008**
The genotype will show darkest kernel in wheat is– **AABB**	**MHT CET-06.10.2020 Shift-I**
Polygenic concept of inheritance was first experimentally shown by– **Nilsson Ehle**	**AMU-2003**
Walter Sutton is famous for his contribution to– **Chromosomal theory of inheritance**	**UP CPMT-2013**
In which complementary gene interaction ratio of 9 : 7 is observed– **Flower colour in pea**	**Kerala PMT-2009**
If a plant having yellow or round seeds was crossed with another plant having green and wrinkled seeds then F_1 progeny are in the ratio– **All yellow and round seeds**	**JIPMER-2005**
Law of Independent Assortment	
Some individuals with blood group A may inherit the genes for blond hair, while other individuals with blood group A may inherit the gene for brown hair. This can be best explained by the principle of– **Indepemdent assortment**	**AFMC -2009**
Change in the number of body parts is called– **Meristic variation**	**Uttarakhand PMT-2009**
Mendels law of independent assortment can be proved by– **Dihybrid cross**	**CMC Vellore-2014, Rajasthan PMT-1998**
A dihybrid ratio of 1 : 4 : 6 : 4 : 1 is obtained instead of 9 : 3 : 3 : 1. This is an example of– **Polygenic inheritance**	**Haryana PMT-2002**
Mendel studies inheritance of seven pairs of traits in pea which can have 21 possible combinations. If you are told that in one of these combinations, independent assortment is not observed in later studies, your reaction will be– **Mendel might not have studied all the combinations**	**AIPMT-1993**
Chromosomal Theory of Inheritance	
Experimental verification of chromosomal theory of inheritance was done by– **Thomas Hunt Morgan**	**AP EAPCET-23.05.2023, Shift-I**
This is the cross between F_1 generation and either of their parents– **Back cross**	**AP EAPCET-23.05.2023, Shift-I**
The animals possesses giant chromosome is– **Drosophila**	**WB JEE-2012**
The chromosome theory of heredity was proposed by– **Sutton and Boveri**	**Rajasthan PMT-1995, NEET Re Exam-04.09.2022, Tripura JEE-2019**

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X-chromosomes of female in a sex- linked inheritance case can be passed on to– **Male and female progeny**	**CMC Ludhiana-2008**
The fruit fly *Drosophila melanogaster* was found to be very suitable for experimental verification of chromosomal theory of inheritance by Morgan and his colleagues because– **It completes life cycle in about two weeks**	**AIPMT (Mains)-2010**
Balbiani rings are the structural features of– **Polytene chromosomes**	**JIPMER-2010**
Taylor conducted the experiments to prove semi conservative mode of chromosome replication on– **Vicia faba**	**NEET-2016 Phase-II**
The chromosome number in meiocyte is 34. The organism could be– **Apple**	**Karnataka CET-2015**
Chromosome consists of– **DNA and histone**	**Rajasthan PMT-2001**
Genotypic and phenotypic ratio in monohybrid cross remains same in case of– **Intermediate inheritance**	**J&K CET-2011**

Linkage and Recombination

'Gene-mapping' technology was developed by– **Sturetevent**	**Karnataka CET-20.05.2023**
The term 'linkage' was coined by– **Thomas Hunt Morgan**	**TS EAMCET 10.05.2023 Shift-I**
The unit of recombination is– **Recon**	**Rajasthan PMT-1996**
When a cluster of genes show linkage behavior they– **do not show independent assortment**	**BVP-2008 / Rajasthan PMT-2007, Uttarakhand PMT-2007 / AIPMT-2003**
Percentage of recombination between A and B is 9%, A and C is 17%, B and C is 26%, then the arrangement of genes is– **BAC**	**VMMC-2013 / AIIMS-2009**
Crossing over in diploid organisms is responsible for– **Recombination of linked genes**	**BVP-2012 / MGIMS Wardha-2007**
The formulated the chromosomal theory of linkage by– **T H Morgan and W Castle**	**MGIMS Wardha-2014**
The exception of Mendel's law of segregation is– **Linkage**	**JIPMER-1998 / J&K CET-2006, Punjab MET-2006 / JCECE-2003, Rajasthan PMT-2002**
Genes when close together on a chromosomes are known as– **Linkage**	**Kerala PMT -2015 / DUMET-2008**
Father of experimental genetics is– **T.H. Morgan**	**VMMC-2014**
Depending upon the distance between any two genes which is inversely proportional to the strength of linkage, cross overs will vary from– **0 - 50 %**	**AMU-2012**
An inheritable change in genetic material is known as – **Mutation**	**MHT CET-06.10.2020 Shift-I**
An example of complete sex linkage is– **Myopia**	**MHT CET-06.10.2020 Shift-I**
Recombination is involved in the process of– **Crossing over**	**DUMET-2009**
In sex-linkage the specialty is– **Criss cross inheritance**	**Haryana PMT-2003**
In male human, total linkage of groups occur in their chromosome is– **24**	**CG PMT-2010**

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Lack of independent assortment of two genes A and B in fruitfly Drosophila is due to– **Linkage**	**CMC Ludhiana-2009 / AFMC-2008, JCECE-2009,2014 / AMU-2007 / CG PMT-2006, Manipal-2007,2013,2014 / WB JEE-2006**
Two genes R and Y are located very close on the chromosomal linkage map of maize plant. When RRYY and rryy genotypes are hybridized, the F_2 segregation will show– **Higher number of the parental types**	**AIPMT-2007**
In Morgan's experiment with Drosophila, when yellow bodied white eyed female was crossed with brown bodied red eyed male and their F_1 progeny were intercrossed. What was the percentage of recombinants in F_2 generation– **37.2%**	**Karnataka CET-2019**
Irregularity is found in Drosophila, during the organ differentiation for example, in place of wing, long legs are formed. The gene that is responsible for– **Homeotic gene**	**AIPMT-2000**
A and B genes are linked. What shall be genotype of progeny in a cross between AB/ab and ab/ab– **AaBb and aabb**	**AIPMT-2001**
Ratio of complementry genes is– **9 : 7**	**AIPMT-2001**
Genetic recombination is due to– **Fertilization and meiosis**	**Rajasthan PMT-2005, 2006**
Linkage is contradictory to the Mendel's law of– **Independent assortment**	**Tripura JEE-2017**
Linked genes HBA1 and HBA2 are located on the pair of chromosomes is– **16**	**GUJCET-2021**
Maize has ten pairs of chromosomes. Total number of linkage groups will be present, if all the genes are mapped– **10**	**AIIMS-1994**
Crossing over that results in genetic recombination in higher organisms occurs between– **Non-sister chromatids of a bivalent**	**AIPMT-2004**
The recessive genes located on the X-chromosomes in humans are always– **Expressed in males**	**AIPMT-2004, Manipal -2007**
The frequency of recombination between gene pairs on the same chromosome as a measure of the distance between genes was explained by– **Alfred Sturtevant**	**NEET-2019**
The map that unit (Centimorgan) is adopted in the construction of genetic maps– **A unit of distance between genes on chromosomes, representing 1% cross over**	**NEET-2019**
The movement of a gene from one linkage group to another is called– **Translocation**	**AIPMT-2015**
A gene showing codominance has– **Both alleles independently expressed in the heterozygote**	**AIPMT (Re-Exam)-2015**
Primary source of allelic variation is– **Recombination**	**AIIMS-2005**
The distance between two genes in a chromosome is measured in cross-over units the represent is– **Percentage of crossing over between them**	**AIIMS-2008**
The suitable for experiment on linkage is– **AABB×aabb**	**AIPMT-1993**
Crossing over is the exchange of genetic material between– **Non-sister chromatids of the homologous chromosomes**	**J&K CET-2011**
When two genetic loci produce identical phenotypes in cis and trans position they are considered to be– **Pseudoalleles**	**Punjab MET-2005**
The information is essential to determine the genetic map distance between two genes located on the same chromosome is–**Percentage of crossing over or recombinant frequency between the two genes**	**WB JEE-2015**

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Sex Determination	
The Drosophila with the karyotype AAA+XX is– **Intersex genotype**	**AP EAPCET-11.05.2023, Shift-II** **AP EAMCET-28.04.2017 Shift-I**
The symbols are used for representing chromosome of birds is– **ZZ-ZW**	**JCECE-2008**
A couple has 6 children, 5 are girls and 1 is boy. The percentage of having a girl on next time is– **50%**	**AFMC-2000**
Y- chromosome present in– **Male**	**Rajasthan PMT-1996**
The type of sex determination is found in grasshopper– **XX-XO type**	**UP CPMT-2010**
Autosomes in humans are– **22 pairs**	**BVP-2012 / MGIMS Wardha-2007,** **CG PMT-2007 / Manipal-2001**
Sex chromosomes are also known as– **Allosomes**	**AMU-2005 / Manipal-2004**
Drosophila flies with XXY genotype are females, but human beings with such genotype are abnormal males. It shows that– **Y-chromosome is male determining in human beings**	**AFMC-2007**
Number of Barr- bodies in XXXX female is– **Three**	**BHU PMT (Screening)-2010**
Gene TDF occurs in– **Y-chromosome**	**AMU-2011**
Drosophila melanogaster has– **3 pair of autosomes and one pair of sex chromosomes**	**CG PMT-2007 / VMMC-2006**
According to genic balance theory of Bridges X/A = 1.5 will make the individual– **Meta or Super female**	**VMMC-2006 / BCECE-2001**
In man, the normal number of chromosomes are– **46**	**CG PMT-2007**
The twenty third pair of chromosomes in man is known as– **Heterosome**	**AP EAMCET-2004**
Male sex is determined in human zygote by– **Chromosome composition of sperm**	**Haryana PMT-2002**
Ishihara chart is used to detect– **Colour blindness**	**Haryana PMT-2005**
In upon amniocentesis of a pregnant woman, it is found that the embryo contains both, Barr body and F-body. The syndrome likely to be associated with the embryo is– **Klinefelters syndrome**	**Haryana PMT-2004**
When an animal has both the characters of male and female, it is called– **Gynandromorph**	**AMU-2006**
Result of reciprocal crosses are different in– **Cytoplasmic inheritance**	**JIPMER-1995**
Based on the experiments conducted by Bridges on Drosophila, the female sex of the Drosophila is determined by the genes located on which chromosome– **X**	**AP EAMCET-2001**
Chromosomal mechanism of sex determination in human beings is called– **Heterogamesis**	**MHT CET-06.10.2020 Shift-I**
Two sets of chromosomes are found in – **Diploid cells**	**DUMET-2009**
In human sex determination the key factor is– **Y-chromosome**	**VMMC-2010**
An example for sex influenced inheritance– **Baldness**	**AP EAMCET-2002**
In Drosophila the XXY condition leads to femaleness where as in human beings the same condition leads to Klinefelters's syndrome in male. It proves– **In human beings Y-chromosome is active in sex determination**	**BVP-2015**
When released from ovary, human egg contain– **One X chromosome**	**AFMC-2006**

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The chromosomal basis of sex determination was discovered in the plant– **Melandrium**	**VMMC-2015**
A colourblind mother and normal father would have– **Colour blind sons and normal/carrier daughters**	**BVP-2012**
Barr body is associated with– **Sex chromosome of female**	**VMMC-2007, Rajasthan PMT-2007**
In human the inheritance of sex linkage takes place through– **Y - chromosome, X - chromosome**	**MGIMS Wardha-2003**
Sex determination in humans takes place by– **Sex chromosomes of father**	**MGIMS Wardha-2003**
Human female possess 44 + XX chromosomes. The secondary oocyte shall have– **22 + X**	**Manipal-2006**
Excessive growth of hair on the pinna is a feature found only in males because– **The gene responsible for the character is present on the Y chromosome only**	**Karnataka CET-2008**
The conditions that of the zygotic cell would lead to the birth of a normal human female child– **Two X chromosomes**	**AIPMT (Mains)-2011**
Drumstick Barr bodies are found in– **Some neutrophils of females**	**AP EAMCET-2010**
Human chromosome number was determined correctly by– **Tjio and Levan**	**AMU-1997**
Pattern baldness, moustaches and beard in human males are examples of– **Sex limited traits**	**AMU-2007**
X-chromosomes of female in a sex-linked inheritance case can be passed on to– **Male and female progeny**	**AMU-2007 AMU-1998**
In humans dosage compensation– **Brings about equality in X–coded gene product**	**AMU-2015**
Mental retardation in man associated with sex chromosomal abnormality is usually due to– **Increase in X complement**	**AMU-2002**
Sex chromosomes of male bird are– **ZZ**	**MHT CET-08.10.2020 Shift-I**
'Sex-determination', in humans is identified by– **Germ cell → sex chromosomes**	**GUJCET-2023**
A boy receives his X-chromosome from– **His mother only**	**Uttarakhand PMT-2011**
XO type of sex determination can be found in– **Grasshoppers**	**NEET-2022 / Kerala PMT-2011**
A man can inherit which chromosome from his maternal grand mother or maternal grand father – **X chromosome**	**Kerala PMT-2008**
Genes present on Y-chromosome are called– **Holandric gene**	**AIIMS-1997 / Assam CEE-2014 BVP-2001**
What should be avoided in biological marriages– **A^+ boy and A^- girl**	**Uttarakhand PMT-2006**
Sex is determined in human beings– **At time of fertilisation**	**AIPMT-1993**
A family of five daughters only is expecting sixth issue. The chance of its being a son is– **50%**	**AIPMT-1988**
Genetic identity of a human male is determined by– **Y-Sex-chromosome**	**AIPMT-1997**
A fruit fly is heterozygous for sex linked genes, when mated with normal female fruit fly, the males specific chromosome will enter egg cell in the proportion– **1 : 1**	**AIPMT-1997**

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Chromosomal constitution of normal human female can be written as– **44 + XX**	**MHT CET-2019**
Peacock shows genotype– **ZZ**	**MHT CET-2016, AP EAPCET-07.09.2021 Shift-I**
The type of sex determination in honey bee is– **Haplo-diploidy**	**Karnataka CET-2017**
Double lines in pedigree analysis show– **Consanguineous marriage**	**Karnataka CET-2015**
Chromosome other than sex chromosome is known as– **Autosome**	**Rajasthan PMT-2001**
Super male and super female type determination of sex in Drosophila is based on– **Genic balance**	**CG PMT-2004**
A hereditary disease which is never passed on from father to son is– **X-chromosomal linked disease**	**JIPMER-2011**
A woman with two genes (one on each X-chromosome) for haemophilia and one gene for colour blindness on the X-chromosome marries a normal man. How will the progeny be– **50% haemophilic colourblind sons and 50% haemophilic sons**	**JIPMER-2011**
Mutations in Oenothera lamarckiana plants was first identified by– **Hugo de Vries**	**AP EAPCET-11.05.2023, Shift-I**
Change in one base in mRNA leading to termination of polypeptide is known as which type of mutations– **Nonsense mutation**	**Uttarakhand PMT-2007**
The major cause of evolution of genes and protein is– **Point mutation**	**DUMET-2010**
The point mutations A to G, C to T, C to G and T to A in DNA are– **Transition, transition, transversion and transversion respectively**	**JIPMER-1997**
XO type of sex determination and XY type of sex determination are the examples of– **Male Heterogamety**	**Karnataka CET-2022**
Forthcoming generations are less adapting than their parental generation due to– **Mutation**	**BHU PMT (Screening)-2010, UP CPMT-2009**
Haploids are more suitable for mutation studies than the diploids. This is because– **All mutations, whether dominant or recessive are expressed in haploids**	**BHU PMT (Screening)-2010**
Mutation is more common when it is present in– **Dominant condition**	**Rajasthan PMT-2009, MGIMS Wardha-2005**
When purine substituted by pyrimidine, the resulting mutation is– **Transversion mutation**	**AMU-1998**
Mutation theory to explain mechanism of evolution was given by Hugo de Vries and he experimented on– **Evening primrose**	**VMMC-2006**
When the discovery is made by accident and unexpectedly the phenomenon is called– **Serendipity**	**Haryana PMT-2002**
The mutagenic agent is– **2, 4-D**	**Haryana PMT-2009 MGIMS Wardha-2009**
de Vries gave his mutation theory on organic evolution, while working on– **Oenothera lamarckiana**	**JIPMER-2007, CG PMT-2006**
Normally DNA molecule has A-T, G-C pairing. However, these bases can exist in alternative valency status, owing to rearrangement called– **Tautomerisational mutation**	**DUMET-2001**

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Mutation generally produces– **Recessive genes**	**Haryana PMT-2010**
Allelic sequence variation where more than one variant allele at a locus in a human population with a frequency greater than 0.01 is referred to as– **DNA polymorphism**	**JIPMER-2014**
Generally used for induced mutagenesis in crop plants is– **Gamma rays (from cobalt 60)**	**SRM JEEE-2018 / JIPMER-2007**
Responsible for hot spots for spontaneous point mutations is– **5-bromouracil**	**JIPMER-2015**
Change occurs by changing one base in DNA is– **Does not necessarily change the phenotype**	**AIPMT-1999**
If a diploid cell is treated with colchicines then it becomes– **Tetraploid**	**AIPMT-2002**
Euploidy is best explained by–**Exact multiple of a haploid set of chromosomes**	**AMU-2009**
Rarely observed phenotype in population is called– **Mutant type**	**MGIMS Wardha-2011**
The formation of multivalent at meiosis in dipioid organism is due to– **Reciprocal translocation**	**BHU PMT (Mains)-2006, 2010**
If mutation changes codon in such a way that there is no effect on functioning and overall structure of protein. This type of mutation is termed as– **Silent mutation**	**SRM JEEE -2017**
Theory of 'saltations' was given by– **Hugo de Vries**	**AIIMS-2011**
One of the parents of a cross has mutation in its mitochondria. In that cross, the parent is taken as male. During segregation of F_2 progenies that mutation is found in– **None of the progenies**	**Manipal-2014**
Identify the mutation and the amino acid involved in causing sickle cell anaemia disease– **Point mutation, Valine**	**TS EAMCET-31.07.2022 Shift-II**
H.J. Muller had received Nobel prize for– **Discovering the induced mutations by X-rays**	**Haryana PMT-2000**
The effect of todays radioactive fallout will probably be more harmful to children of future generation than to children now living because– **Mutated genes are frequently recessive**	**Punjab MET-2005**
A mutagen pollutant is– **Hydrocarbons**	**Punjab MET-2005**
Genetic Disorders	
Down's syndrome is due to– **Trisomy of 21st chromosome**	
Sickle cell anemia is an example of– **Pleiotrophy**	**TS EAMCET 10.05.2023 Shift-I**
Trisomy of 18th chromosome causes– **Edwards syndrome**	**AP EAPCET-23.05.2023, Shift-II**
Chromosome which represents Klinefelters syndrome is– **XXY**	**Manipal-2012 / WB JEE-2006, BCECE-2002 / AFMC-2002**
XO chromosomal abnormality in humans causes– **Turners syndrome**	**Rajasthan PMT-2009 / Punjab MET-2009, CMC Vellore-2009 / UP CPMT-2009, AIIMS-2007, 1999 / MGIMS Wardha-2003**

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The most common type of haemophilia results from the congenital absence of– **Factor-VIII**	**UP CPMT-2004**
Defect in amino acid metabolism may results in– **Phenylketonuria**	**UP CPMT-2004**
In man, which of the genotypes and phenotypes may be the correct result of aneuploidy in sex chromosomes– **22 pairs + XXY males**	**SRM JEE-2017 / UP CPMT-2004**
The condition that is called monosomic– **2n – 1**	**WB JEE-2010**
If a boys father has haemophilia and his mother has one gene for haemophilia, what is the chance that the boy will inherit the disease– **50%**	**Punjab MET-1999**
Number of chromosomes in Down syndrome is– **47**	**AFMC-2005**
Sex linked disease is– **Colour blindness, Haemophilia**	**BCECE-2008, UP CPMT-2003**
The loss of one single chromosome creates a condition called– **Monosomy**	**VMMC-2013**
If a haemophilic carrier female marries a normal man, the chances are that– **50% of the sons will have haemophilia**	**MGIMS Wardha-2014**
Balbiani rings are the structural features of– **Polytene chromosomes**	**Karnataka CET-2002**
The gene for haemophilia is known to be located on– **X chromosome**	**Rajasthan PMT-2004 JIPMER-1997**
Gynecomastia is a symptom of– **Klinefelter's syndrome**	**Karnataka CET-2022,2013, JIPMER-2019, Kerala PMT-2008**
A haemophilic man marries a normal homozygous woman what is the probability that their son will be haemophilic– **0%**	**AMU-2011**
Both sickle cell anaemia and Huntingtons chorea are– **Congenital disorders**	**BCECE-2014,2013 / BHU PMT(Mains)-2010, AFMC-2008**
Absorption of toxic amounts of iron due to a genetically defective control mechanisms is known as– **Hemochromatosis**	**AMU-1998**
Haemophilic man marries a carrier woman. Percentage of daughter becoming haemophilic shall be– **50%**	**VMMC-2006 / Haryana PMT-2002**
The Christmas disease patient lacks antihaemophilic– **Factor IX**	**Karnataka CET-2003**
Queen Victoria of England was– **Haemophilic carrier**	**Haryana PMT-2002 / Karnataka CET-2000**
The genotype that will indicate colour blindness in male– **X^cY**	**Haryana PMT-2002**
Albinism is caused by deficiency of– **Tyrosinase**	**Haryana PMT-2005**
A woman has haemophilic son and three normal children. Her genotype and that of her husband with respect to this gene would be– **X^hX and XY**	**MGIMS Wardha-2009 / CG PMT-2009**
A haemophilic man marries a carrier woman, their daughter progenies are– **Half haemophilic and half carrier**	**AMU-2006**
If haemoglobin (Hb) of a normal individual and a sickle-cell patient are run in electrophoretic field, they will show– **Different mobilities**	**AMU-2012**
Occurrence of an extra chromosome in a diploid set of chromosome is called– **Trisomy**	**MHT CET-07.10.2020 Shift-I**
Genetic counsellors can identify heterozygous individuals by– **Screening procedures**	**BVP-2007, BHU PMT-2004**

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Dominant lethal gene is one is– **Kills the organism**	**Haryana PMT-2003**
Carrier organisms refers to an individual which carries a– **Recessive gene that is not expressed**	**Haryana PMT-2003**
The genetic basis of haemophilia was revealed by studies of– **Family pedigree**	**CG PMT-2010**
If a man who is colour blind marries a woman who is pure normal for colour vision, the chances of their sons having colour blindness is– **0% (zero)**	**Rajasthan PMT-2006**
The main cause of Edward syndrome Patau syndrome and Down syndrome is– **Change in autosomes**	**Manipal -2010 / MGIMS Wardha-2003**
An example for holandric inheritance is– **Webbed toes**	**AP EAMCET-2002 JCECE-2002**
A normal son of Haemophilic father marries a daughter of haemophilic father. State the possibility of first born daughter child– **0%**	**GUJCET-2019 CG PMT-2009 / MGIMS Wardha-2009**
Blood stained clothing of Abraham Lincoln has been analysed for evidence of, the genetic disorder is– **Marfan's syndrome**	**GUJCET-2017**
Alkaptonuria (aa) is which type of error– **Metabolism error**	**GUJCET-2017**
If father shows normal genotype and mother shows a carrier trait for haemophilia– **A male offspring has 50% chances of active disease**	**Karnataka CET-2012**
Number of Barr body ……. will found in case of Turner's syndrome. **0**	**JIPMER-2016**
The phenotype of the offsprings born to a woman with normal vision (homozygous) and a colourblind man is– **All the sons and daughters are with normal vision**	**AP EAMCET-2013**
Male children born to a colour blind mother and a normal father is– **100% Colour blind only**	**TS EAMCET-30.07.2022 Shift-II**
Inheritance of skin colour in human is an example of– **Polygenic inheritance**	**UP CPMT-2011**
Genetic disorders such as haemophilia and Duchenne muscular dystrophy more prevalent in males than females because– **They are X-linked recessive disorders**	**SRM JEEE-2018**
The gene for haemophilia is located on 'X' chromosome. Hence it is normally impossible for a– **Haemophilic father to pass the gene to his son**	**Karnataka CET-2016**
A woman with normal vision, but whose father was colourblind, marries a colourblind man. Suppose that the fourth child of this couple was a boy. This boy – **May be colourblind or may be of normal vision**	**JIPMER-2007**
The ratio that is expected in offsprings if father is colour blind and mother-father was colour blind is– **50% daughter – colour blind**	**AIPMT-1999**
The disease that occurs only in males is– **Lesch-Nyhan disease**	**AMU-2002**
A woman with albinic father marries an albinic man. The proportion of her progeny is– **1 normal : 1 albinic**	**Rajasthan PMT-2011**
Absence of teeth, bifid tongue and mental retardness are observed in– **Oral-facial-digital syndrome**	**GUJCET-2022**
Myotonic dystrophy occurs due to the presence of which type of dominant trait– **Autosome linked dominant trait**	**NEET-2022**
Philadelphia chromosome is found in the patient suffering from– **Myelocytic leukaemia**	**AIIMS-1994**

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In man, four phenotypes of blood groups are due to the presence of antigen-A and antigen-B on the RBC. The chromosome that has the gene to control these antigens is– **9th chromosome**	**JCECE-2010**
In a marriage between male with blood group A and female with blood group B, the progeny had either blood group AB or B. What could be the possible genotype of parents– **I^A i (Male) ; I^B I^B (Female)**	**NEET (Odisha)-2019**
If both parents are carries for thalessemia, which is an autosomal recessive disorder, what are the chances of pregnancy resulting in an affected child? **25%**	**NEET-2013**
If a diploid cell is treated with colchicine then it becomes– **Tetraploid**	**AIPMT-2002**
A normal man and a normal woman both having one of their parent albino, if get married then what is the probability of their child of being albino– **25%**	**JIPMER-2019**
Of a normal couple, half the sons are haemophiliac while half the daughters are carriers. the gene is located on– **One X-chromosome of mother**	**AIPMT-1993**
A colour blind mother and normal father would have– **Colour blind sons and normal/carrier daughters**	**AIPMT-1992**
In a person suffering from sickle cell anaemia, the____becomes half moon shaped. **RBC**	**MHT CET-2018**
Feminised males have____chromosomes. **47**	**MHT CET-2017**
A couple, both carriers for the gene sickle cell anaemia planning to get married, want to know the chances of having anaemic progeny is– **25%**	**MHT CET-2014**
2n - 2 is known as– **Nullisomy**	**DUMET-2006**
The colour blind daughter is born in case of a– **Carrier mother and colour blind father**	**CMC Vellore-2015**
A colourblind man marries the daughter of another colourblind man whose wife had a normal genotype for colour vision. In their progeny– **Half of their sons and half of their daughter would be colourblind**	**Karnataka CET-2013**
If a colour blind man marries a woman who is normal but carries this trait, the progeny will be– **50% males and 50% females colour blind**	**MP PMT-2013**
Gauchers disease is genetic disorder, which is associated with the abnormal metabolism of– **Fat**	**BVP-2014**
Hurlers disease is caused by– **Deficiency of lysosomes**	**BVP-2014**
An autosomal recessive genetic disorder is– **Cystic fibrosis**	**TS EAMCET-29.09.2020 Shift-I**
A man, whose father is colourblind, marries a lady who is daughter of a colour blindman. Their off springs will be– **All sons colourblind**	**J&K CET-2013**
Chromosomal Disorders	
Number of barr bodies in XXXX female would be– **3**	**Haryana PMT-2002**
Male XX and female XY sometime occur due to– **Transfer of segments in X and Y chromosomes**	**AIPMT-2001**
If a germ cell in a female gonad and a germ cell in a male gonad begin undergoing meiosis simultaneously what will be the ratio of over and sperms produced– **1 : 4**	**Karnataka CET-2005**
Webbed neck, low set ears and broad chest are the symptoms associated with– **Females having XO chromosomes**	**Rajasthan PMT-2001**
Abnormal sterile male, with under developed genitalia, feeble breasts and sponsely hairy body are symptoms associates with– **Males having XXY chromosomes**	**Rajasthan PMT-2001**

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05.

MOLECULAR BASIS OF INHERITANCE

5.1 The DNA

- In DNA strand, the nucleotides are linked together by– **Phosphodiester bonds**
- In a DNA molecule, the phosphate group is attached to carbon ..... of the sugar residue of its own nucleotide and carbon ..... of the sugar residue of the next nucleotide by ..... bonds– **5', 3', phosphodiester**
- DNA as an acidic substance present in nucleus was first identified by ..... in 1869; he named it as ..... **Meischer, nuclein**
- Watson and Crick (1953) proposed DNA double helix model and won the Nobel Prize; their model of DNA was based on X-ray diffraction studies of DNA done by – **Wilkins and Franklin, Chargaff's base equivalence rule**
- If a double stranded DNA has 20% of cytosine, the percentage of adenine in it will be– **30%**
- If the sequence of bases in one strand of DNA is ATGCATGCA, what would be the sequence of bases on complementary strand– **TACGTACGT**
- Synthesis of DNA from RNA is explained by– **Reverse transcription**
- Histone proteins are– **Basic, positively charged**
- The structure in chromatin seen as 'beads-on string' when viewed under electron microscope are called– **Nucleosomes**
- The packaging of chromatin at higher level requires additional set of proteins that are referred to as– **Non-histone chromosomal (NHC) proteins**
- DNA is a long polymer of– **Deoxyribonucleotides**
- Histones are– **Positively charged, basic protein**
- The length of the DNA of Baceriophage lambda is– **48502 bp**
- The distance between a base pair in a helix is approximately equal to– **0.34 nm**
- _____ proposed the central dogma in molecular biology– **Francis Crick**
- Diploid content of human DNA is– **6.6×10^9 bp**
- _____ present in RNA but not in DNA– **Uracil**
- The backbone in a polynucleotide chain is formed– **Sugar and phosphate**
- The purine bases are – **Adenine and Guanine**
- The type of bond is present between nitrogenous base and pentose sugar is– **N-glycosidic linkage**
- The type of bond is present between nucleoside and OH group is– **Phosphodiester linkage**
- 5-methyl uracil is also known as– **Thymine**
- **(i) → Replication, (ii) → Transcription, (iii) → Translation**
- ---------- are the amino acids of histones– **Lysine and Arginine**
- Negatively charged DNA is wrapped around the positively charged histone octamer called– **Nucleosome**
- Nucleosome consist of repeated unit of structure in nucleus called– **Chromatin**
- Chromatin further coiled and condensed at, that phase is– **Metaphase**
- The helical structure of protein is stabilized by– **Hydrogen bonds**
- Each base pair from the next one in DNA double helix model in– **0.34 nm**
- In one polynucleotide strand of a DNA molecule, the ratio of A+T/G + C is 0.3, the A+G/T+C ratio of the entire DNA molecule is– **1**
- A = T and G = C. The given relationship of DNA is– **Chargaff's rule**
- Negatively charged DNA wrapped around positively charged histone octamer is called - **Nucleosome**
- DNA packaging in eukaryotes is done by formation of– **Nucleosome**
- If DNA of a particular species was analyzed and it was found that it contains 27 percent A, the percentage of C is– **23 percent**

5.2 Search for Genetic Material

- The process of transformation is not affected by the enzymes is– **RNase, Peptidase, Lipase**
- To prove that DNA is the genetic material, which radioactive isotopes were used by Hershey and Chase (1952) in their experiments– **^{32}P and ^{35}S**

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- If the DNA of a virus is labelled with ^{32}P and the protein of the virus is labelled with ^{35}S, after transduction which molecule(s) would be present inside the bacterial cells– **^{32}P only**
- RNA is the genetic material in– **Tobacco mosaic virus (TMV)**
- ____ enzyme inhibit transformation of R-strain bacteria to S-strain– **DNase**
- A transcription unit in DNA is defined primarily by the– **Promoter, Structural gene and Terminator**
- Best genetic material is– **A nucleic acid that is capable of being used as a template in replication and transcription**
- A segment of DNA molecule contains 20,000 base pairs, the number of phosphate molecule in this DNA molecule is– **40,000**
- Duplication of polynucleotides, Transcription of DNA template and Recognition of triplet codons by– **t-RNA**
- Avery, Mc Leod and Mc Carty proved the– **Transforming material is DNA**
- The bacteria used in experiments of transformation by Griffith– ***Streptococus pneumoniae***
- Radioactive elements used by Hershey and Chase experiment were– **^{35}S and ^{32}P**
- Third step in Hershey and Chase experiment was– **Centrifugation**
- The density gradient used in Meselson and Stahl experiment is– **Cesium chloride**
- In a phoshodiester bond formation a phosphate group is bounded with– **3'-OH of one sugar and 5'-OH of next sugar**
- A typical nucleosome contains ____ bp of DNA helix– **200**
- _____ proposed the Double Helix model for the structure of DNA– **Watson and Crick**
- The identification of the transforming principle proved that– **Genetic information is contained in DNA**
- Name the scientist proved experimentally that DNA is the genetic material– **Griffith**
- Semi – conservative nature of DNA experiment given by– **Meselson and Stahl.**
- Jacob and Monod won Nobel Prize for their work on– **Operon model**
- The experiments by Hershey and Chase helped confirm that DNA was the hereditary material on the basis of the finding that– **Radioactive phosphorus was found in the cell**
- In Griffith's transforming principle, if heat killed S - strain is injected into mice, then– **Mice will live**

5.3 RNA World

- The first genetic material was– **RNA**
- The life that processes are evolved around RNA– **Metabolism, Translation, Splicing**
- Viruses having RNA genome evolve faster because– **RNA is comparatively unstable, so mutate at a faster rate**
- The bases of RNA are the same as those of DNA with the exception that RNA contains– **Uracil instead of thymine**
- Nucleic acids were discovered by– **F. Miescher**
- Ribosome act as a catalyst in the formation of– **Peptide bond**
- Genetic RNA is– **RNA that carries genetic message**
- RNA primer is used in– **Replication**

5.4 Replication

- ..... phenomena was experimentally proved by Meselson and Stahl is– **Semi-conservative DNA replication**
- First experimental proof for semi-conservative DNA replication was shown in– **Escherichia coli**
- The average rate of polymerisation of base pairs during replication in E. coli is- **2000 bp per second**
- DNA replication takes place at ..... phase of the cell cycle– **S**
- Represents the dominance of RNA world– **Process of splicing, Translation, metabolism**
- After _____ time total 30 normal DNA (^{14}N) molecules will be produced in E.coli– **100 minute**
- Two strands of DNA are held together by– **Hydrogen bonds**
- Okazaki segments are formed during– **Replication**
- Okazaki fragments during DNA replication– **Polymerise in 5'→3' direction and explain 3'→5' DNA replication**
- DNA polymerase helps in– **Make DNA from nucleotides**
- In ….. type of DNA replication of the two newly formed molecules, one is purely a new one and the other one is old– **Semiconservative**
- The discontinuously synthesized fragments are joined by the enzyme– **DNA ligase**
- The reaction is required for proofreading during DNA replication by DNA polymerase III– **3' to 5' exonuclease activity**
- DNA unwinding is done by– **Helicase**

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5.5 Transcription

- The process of copying genetic information from one strand of DNA into RNA is termed as ..... **Transcription**
- The enzyme DNA dependent RNA polymerase catalyses the polymerisation reaction in ..... direction– **only 5' → 3'**
- If the sequence of bases in coding strand of DNA is ATTCGATG, then the sequence of bases in mRNA will be– **AUUCGAUG**
- If the sequence of bases in DNA is GCTTAGGCAA, then the sequence of bases in its transcript will be– **CGAAUCCGUU**
- Starts with promoter region and ends in terminator region– **Transcription unit**
- During transcription, the site of DNA molecule at which RNA polymerase binds is called– **Promoter**
- Polycistronic messenger RNA (mRNA) usually occurs in– **Bacteria, Prokaryotes**
- In transcription in eukaryotes, heterogenous nuclear RNA (hnRNA) is transcribed by– **RNA polymerase II**
- Methyl guanosine triphosphate is added to the 5' end of hnRNA in a process of– **Capping**
- In eukaryotes, the process of processing of primary transcript involves Removal of introns, Capping at 5' end– **Tailing (polyadenylation) at 3' end**
- Pre dominant site for control of gene expression in prokaryotes– **Transcriptional initiation**
- ___ binds specific amino acid by the help of aminoacyl tRNA synthetase– **Transfer RNA**
- Several proteins may be produced at the same time from a single mRNA by– **Polyribosome**
- Assemblies of protein and snRNPs, called spliceosomes, may catalyze splicing– **RNA Processing**
- _____ transcribed and then translated to form a protein product– **Gene for transcription factor**
- The RNA has structural and catalytic in translation– **r-RNA**
- Segment of DNA coding for polypeptide is– **Cistron**
- Coding sequence appear in mature RNA is– **Exon**
- RNA polymerase (II) transcribes– **mRNA**
- Capping is a process in– **Methyl guanosine triphosphate is added at 5' end**
- If the sequence of bases in coding strand of DNA is ATTCGATG, then the sequence of bases in mRNA will be – **UAAGCUAC**
- RNA carries the amino acids from the amino acid pool to mRNA during protein synthesis– **tRNA**
- UTRs are the untranslated regions present on– **mRNA**
- The process of transfer of genetic information from DNA to RNA/formation of RNA from DNA is– **Transcription**
- Termination of polypeptide chain is brought about by– **UAA, UAG and UGA**
- A DNA nucleotide chain has AGCTTCGA sequence. The nucleotide sequence of other chain would be– **TCGAAGCT**
- Pyrimidine base present in RNA in place of thymine of DNA is– **Uracil**
- The process of copying genetic information from one strand of DNA into RNA is termed as– **Transcription**
- Eukaryotic RNA polymerase transcribes tRNA– **RNA polymerase III**
- While working on Neurospora crassa, Beadle and Tatum proved that– **Every gene is responsible for a specific enzyme**
- In eukaryotes RNA polymerase-I transcribes– **r RNAs(28 S, 18 S and 5.8S)**
- The DNA sequence that provides binding site for RNA polymerase is– **Promoter**

5.6 Genetic Code

- Amino acids ..... are specified by single codons are– **Tryptophan and methionine**
- ..... codons respectively code for proline and valine amino acids– **CCU and GUU**
- Some amino acids are coded by more than one codon hence the genetic code is– **Degenerate**
- The mutations that involve addition, deletion or substitution of a single base pair in a gene are referred to as– **Point mutations**
- Sickle cell anemia results from a single base substitution in a gene, thus it is an example of– **Point mutation**
- About tRNA is true– **It is also called adepter molecule**
- Amino acid acceptor end to tRNA lies at– **3' end**
- Codons code for amino acid– **61**
- One codon codes for only one amino acid. This means that the genetic code is– **Unambiguous**
- AUG codes for– **Methionine**
- Delete mutation can result in– **Point mutation, Frame shift mutation**

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- Frame shift mutations are caused by– **Deletion and insertion**
- Genetic code is universal because– **From bacteria to human, UUU would code for phenylalanine**
- tRNA cannot read the codons– **UAA, UAG, UGA**
- Deletion or insertion of three or its multiple bases results in– **No effect on reading frame**
- A nonsense/termination codon is– **UAG/UAA**
- The clover-leaf model of tRNA depict its– **Secondary structure**
- Genetic code determines– **The sequence of amino acid in a protein**
- A messenger acid is 336 nucleotides long, including the initiator and termination codons. The number of amino acids in the protein translated from this mRNA is– **111**
- The first codon to be deciphered and the 'amino acid' it codes for, respectively, are– **UUU, phenylalanine**

5.7 Translation

- .....Carries the amino acids from the amono acid pool to mRNA during protein synthesis– **tRNA**
- During translation, activated amino acids get linked to tRNA. This process is commonly called– **Charging of tRNA, Aminoacylation of tRNA**
- In a mRNA molecule, untranslated regions (UTRs) are present at– **5' - end (before start codon), 3' - end (after stop codon)**
- UTRs are the untranslated regions present on– **mRNA**
- What would happen if in a gene encoding a polypeptide of 50 amino acids, 25th codon (UAU) is mutated to UAA– **A polypeptide of 24 amino acids will be formed**
- The process of translation requires the transfer of genetic information from– **A polymer of nucelotides to a polymer of amino acids**
- The region of transcription unit is located towards 3' end of coding strand and it usually defines the end of the process of transcription– **Terminator**
- Aminoacylation of tRNA also known as– **Charging of tRNA**
- The process of translation is– **Protein synthesis**
- anticodon present of tRNA complementary to initiator codon AUG of mRNA is– **UAC**
- During translation ATP are directly used for– **Activation of amino acids**
- In eukaryotes, initiation of polypeptide chain in protein synthesis is induced by– **Methionine**
- During elongation occurring in translation, the enzyme which catalyses the synthesis of peptide bond is– **Peptidyl transferase**
- Termination of the translation process occurs at the– **3' end of the mRNA**
- RNA that picks up specific amino acid from amino acid pool of cytoplasm to carry it to ribosome during protein synthesis is– **tRNA**
- Amino acid sequence in protein synthesis is determined by sequence of– **mRNA**

5.8 Regulation of Gene Expression

- Can not act as inducer– **Glucose, Galactose**
- Segments of chain of nucleotides formed during transcription are – **Okazaki fragements**
- RNA act as enzyme for the formation of peptide bond in bacteria are– **23s rRNA**
- _____Codon has dual function– **AUG**
- The same amino acid sequence of a polypeptide chain can be represented by more than one type of nucleotide sequence in mRNA. It explains– **Degeneracy property of genetic code**
- Primary induction of lac operon, depend on the interaction between the– **Inducer and the repressor molecule**
- The substrate for the enzyme β-Galactosidase is– **Lactose**
- Regulation of an operon by the repressor is referred as– **Negative control**
- Because most of the amino acids are represented by more than one codons, the genetic code is– **Degenerate**
- Genes that are involved in turning on or off the transcription of a set of structural genes are called– **Operator genes**
- Polymorphism is– **Variation at genetic level**
- During expression of an operon, RNA polymerase binds to– **Promoter**
- Regulation of gene expression occur at the level of– **Transcription, Translation, Splicing**
- The sequence of a structural gene in lac operon is– **lac z, lac y and lac a**
- Gene is responsible for the synthesis of a polypeptide chain is called– **Structural gene**
- If repressor binds to operator of lac operon– **Structural genes Z, Y and A fail to transcribe**
- In lac operon model, lactose function as– **Inducer that binds to repressor protein**

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- Lac operon consists of– **One regulatory gene and three structural genes**
- The inducer of lac operon is– **Lactose**
- E. coli cells, with a mutated z gene of the lac operon, cannot grow in medium containing only lactose as the source of energy because– **They cannot synthesize functional beta-galactosidase**

5.9 Human Genome Project

- Human genome consists of approximately– **3×10^9 bp**
- Estimated number of genes in human beings is about– **30,000**
- The methods of sequencing of Human Genome involved– **Expressed Sequence Tags and Sequence Annotation**
- ..... and ..... gene are present in mega project– **3×10^9 bp and 20000 gene respectively**
- Sequence of human genome project was launched in– **1990**
- HGP is closely associated with ..... branch of biology– **Bioinformatics**
- The commonly used vector in human genome project was – **Yeast artificial chromosome**
- The commonly used hosts in HGP were– **Bacteria and yeast**

5.10 DNA Fingerprinting

- DNA fingerprints developed by– **Alec Jeffrey**
- In DNA fingerprinting, hybridised DNA fragments are detected by– **Autoradiography**
- The last human chromosome to be completely sequenced– **Chromosome 1**
- DNA fingerprinting recognizes the differences in– **Satellite DNA, Repetitive DNA**
- The technique is used in DNA fingerprinting– **Southern blotting**
- VNTRs refers to– **Variable Number of Tandom Repeats**
- If an inheritable mutation is observed in a population at high frequency, it is referred as– **DNA polymorphism**

5.11 Miscellaneous

- In a 3.2 Kbp long piece of DNA, 820 adenine bases were found. What would be the number of cytosine bases– **780**
- The association of histone H_1 with a nucleosome indicates that– **The DNA is condensed into a chromatin fibre**
- .....Should be most abundant in animal cell– **rRNA**
- A complex of ribosomes attached to a single strand of RNA is known as– **Polysome**
- That types of RNA act as adapter molecule is– **tRNA**
- Uridine, present only in RNA is a– **Nucleoside**
- The lagging strand away from the replication fork, Okazaki fragments are used to elongate– **DNA replication**
- DNA polymorphism forms the basis of– **Both genetic mapping and DNA fingerprinting**
- A nucleoside differs from a nucleotide. It lacks the– **Phosphate group**
- The promoter site and the terminator site for transcription are located at 5' (upstream) end and 3' (downstream) end– **Respectively of the transcription unit**
- Exons appear but introns do not appear in the mature RNA with regard to– **Mature mRNA in eukaryotes.**
- DNA is a polymer of nucleotides which are linked to each other by 3'-5' phosphodiester bond. To prevent polymerisation of nucleotides, which of the modifications would you choose– **Remove/Replace 3' OH group in deoxyribose**
- ..... steps in transcription is catalysed by RNA polymerase– **Initiation, Elongation, Termination**
- If Meselson and Stahl's experiment is continued for four generations in bacteria, the ratio of $^{15}N/^{15}N$: $^{15}N/^{14}N$: $^{14}N/^{14}N$ containing DNA in the fourth generation would be– **0 : 1 : 7**
- If the sequence of nitrogen bases of the coding strand of DNA in a transcription unit is : 5' - ATGAATG - 3', the sequence of bases in its RNA transcript would be– **5' - AUGAAUG - 3'**
- If the base sequence of a codon in mRNA is 5'-AUG-3', the sequence of tRNA pairing with it must be– **5' - UAC - 3'**
- Chromatin fibres are further coiled and condensed to form chromosomes in– **Metaphase stage of cell division**
- In a DNA strand the nucleotides are linked together by– **Phosphodiester bonds**
- Both deoxyribose and ribose belong to a class of sugars called– **Pentoses**
- The fact that a purine base always pairs through hydrogen bonds with a pyrimidine base in the DNA double helix– **Uniform width throughout DNA**

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- The net electric charge on DNA and histones is– **Negative and positive respectively**
- The promoter site and the terminator site for transcription are located at– **5' (upstream) end and 3' (downstream) end, respectively of the transcription unit**
- The most appropriate for sickle cell anaemia is– **It is a molecular disease, It confers resistance to acquiring malaria**
- The first genetic material could be– **RNA**
- With regard to mature mRNA in eukaryotes– **Exons appear but introns do not appear in the mature RNA**
- The human chromosome with the highest and least number of genes in them are respectively– **Chromosome 1 and Y**
- ……Scientists had no contribution in the development of the double helix model for the structure of DNA– **Meselson and Stahl**
- Discontinuous synthesis of DNA occurs in one strand, because– **DNA dependent DNA polymerase catalyses polymerisation only in one direction (5'→3')**
- The steps in transcription is catalyzed by RNA polymerase– **Elongation**
- Control of gene expression takes place at the level of– **Transcription**
- The last human chromosome to be completely sequenced– **Chromosome 1**
- RNA functions is– **It carries amino acids to ribosomes,**
- In some viruses, DNA is synthesized by using RNA as template. Such a DNA is called– **cDNA**
- The RNA polymerase holoenzyme transcribes– **The structural gene only**
- If the base sequence of a codon in mRNA is 5'-AUG-3', the sequence of tRNA pairing with it must be– **5' - CAU - 3'**
- The amino acid attaches to the tRNA at its– **3'-end**
- To initiate translation, the mRNA first binds to– **The smaller ribosomal subunit**
- In E. coli, the lac operon gets switched on when– **Lactose is present and it binds to the repressor**
- The process of translation of mRNA to proteins begins as soon as– **The small subunit of ribosome encounters mRNA**
- DNA polymorphism forms the basis of– **Both genetic mapping and DNA finger printing**
- If a geneticist uses the blind approach for sequencing the whole genome of an organism, followed by assignment of function to different segments, the methodology adopted by him is called as– **Sequence annotation**
- Ten E.coli with ^{15}N- dsDNA are incubated in medium containing ^{14}N nucleotide. After 60 minutes, how many E.coli cells will have DNA totally free from ^{15}N– **60 cells**
- The role of RNA polymerase III in the process of transcription in eukaryotes– **Transcribes tRNA, 5s rRNA and sn RNA**
- DNA fingerprinting involves identifying differences in some specific regions in DNA sequence, called as– **Repetitive DNA**
- If Adenine makes 30% of the DNA molecule, what will be the percentage of Thymine, Guanine and Cytosine in it– **T : 30; G : 20; C : 20**
- "Only enzyme" that has "Capability" to catalyse Initiation, Elongation and Termination in the process of transcription in prokaryotes– **DNA dependent RNA polymerase**
- RNAs is not required for the synthesis of protein– **siRNA**
- Name the enzyme that facilitates opening of DNA helix during transcription– **RNA polymerase**
- The first phase of translation is– **Aminoacylation of tRNA**
- The term 'Nuclein' for the genetic material was used by– **Meischer**
- In the polynucleotide chain of DNA, a nitrogenous base is linked to the –OH of– **1'C pentose sugar**
- The basis of genetic mapping of human genome as well as DNA finger printing is– **Polymorphism in DNA sequence**
- E. Coli has only 4.6×10^6 base pairs and completes the process of replication within 18 minutes; then the average rate of polymerization is approximately– **4000 base pairs/second**
- Purines found both in DNA and RNA are– **Adenine and guanine**
- Expressed Sequence Tags (ESTs) refers to– **Genes expressed as RNA**
- Features of genetic code does allow bacteria to produce human insulin by recombinant DNA technology– **Genetic code is nearly universal**
- The experimental proof for semi conservative replication of DNA was first shown in a– **Bacterium**
- AGGTATCGCAT is a sequence from the coding strand of a gene. The corresponding sequence of the transcribed mRNA– **AGGUAUCGCAU**
- All are the part of an operon except– **An enhancer**

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EXAM POINT

The DNA	
Histone proteins are positively charged because they are rich in basic amino acid residues– **Arginine and Lysine**	**Karnataka CET-20.05.2023**
Introduction of Genetically modified DNA into eukaryotic cell is called– **Transfection**	**AP EAPCET-22.05.2023, Shift-II**
Scientist associated with DNA sequencing is– **Frederick Sanger**	**AP EAPCET-22.05.2023, Shift-II**
Number of base pairs in full turn of the helical stand and the distance between base pairs in B-DNA– **10, 3.4 Å**	**AP EAPCET-22.05.2023, Shift-II**
The diameter of DNA molecule is– **20 Å**	**VMMC-2011**
The total hereditary material outside the chromosome is called as– **Plasmon**	**VMMC-2011**
If isolated strain of DNA is kept at 82-90°C then– **It uncoils and the two strands separate**	**Punjab MET-2009**
Melting of DNA at an elevated temperature (70 ^{0}C) is primarily due to the breakdown of– **Hydrogen bonds**	**WB JEE-2012**
The length of DNA having 23 base pair is– **78.2 Å**	**WB JEE-2009**
The double helix model of Watson and Crick is known as– **B-DNA**	**UP CPMT-2004**
The structural subunit of DNA is– **Nucleotide**	**WB JEE-2010**
Chromosome is made up of– **DNA and histone**	**WB JEE-2010**
Har Govind Khorana was awarded the Nobel Prize for– **Gene synthesis**	**Punjab MET-1999**
Unit of nucleic acid is– **Nucleotide**	**BCECE-2005**
The banding pattern of chromosome three and six of human beings and chimpanzee show that they had– **Common origin**	**BVP-2010**
A genome contains– **Haploid chromosomal set**	**Rajasthan PMT-1996**
The enzyme is used in DNA multiplication is– **DNA polymerase**	**UP CPMT-2003**
The progresses leads to DNA ladder formation is– **Apoptosis**	**KVPY SB & SX-2015**
Melting temperature for double stranded DNA is the temperature at which 50% of the double stranded molecules are converted into single stranded molecules. Which DNA will have the highest melting temperature– **DNA with 30% cytosine**	**KVPY SB & SX-2015**
The determination of order of bases in a DNA molecule takes place– **Gene sequencing**	**MGIMS Wardha-2014**
Regarding a double helical molecule of DNA is– **Bases are perpendicular to the axis**	**Manipal-2011**
Total number of the nitrogen containing bases are common among both DNA and RNA is– **Three (Adenine, Guanine, Cytosine)**	**MHT CET 5.10.2020 Shift-I**
cDNA library is mostly constructed for organisms like– **Yeast**	**MHT CET 5.10.2020 Shift-I**
Coliphage $\phi \times 174$ contains– **ssDNA**	**BHU PMT (Mains)-2005**
If the total amount of adenine and thymine in a double-stranded DNA is 45%, the amount of guanine in this DNA will be– **27.5%**	**DUMET-2010**
DNA can be formed by– **RNA dependent DNA polymerase**	**DUMET-2008**

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Genes are made up of– **Polynucleotides**	**BHU PMT (Screening)-2009**
Nucleotides are formed by– **Purine, pyrimidine, sugar and phosphate**	**Uttarakhand PMT-2009, BHU PMT (Screening)-2009**
The moiety present at the 5'end of ribose sugar in a polynucleotide is– **Phosphate**	**Kerala PMT-2015**
A structure formed by wrapping of negatively charged DNA around positively charged histone octamer – **Nucleosome**	**Kerala PMT-2015**
In the double-helical structure of DNA, the pitch of the helix is– **3.4 nm**	**Kerala PMT-2015**
If a dsDNA has 20% adenine, what would be its cytosine content– **30%**	**KVPY SA-2016**
In DNA molecule – **There are two strands, which run antiparallel one in 5→3 direction and other in 3→5**	**Rajasthan PMT-2010 AIPMT - 2008**
c-DNA is formed from m-RNA by which enzyme– **Reverse transcriptase**	**MGIMS Wardha-2005**
A typical nucleosome contains – **200 bp of DNA helix**	**AMU-2010**
The small segment of DNA which helps to detect the presence of a gene or a long DNA sequence in biological system is termed as– **DNA probe**	**AMU-1998**
In DNA when AGCT occurs, their association is as per ..... pair. **AT -GC**	**VMMC-2006 / JIPMER-2013**
DNA wrapped around histone protein is called – **Nucleosome**	**HP CET-2012, Rajasthan PMT-1998**
The number of hydrogen bonds between adenine and thymine in a DNA molecule is– **two**	**VMMC-2012 / DUMET-2009, BHU PMT (Screening)-2008, UP CPMT-2008 / CG PMT-2008, BVP-2007 / MGIMS Wardha-2006**
DNA element with ability to change position is called– **Transposon**	**VMMC-2012 / UP CPMT-2008, BCECE-2006**
Nucleotide arrangement in DNA can be seen by– **X-ray crystallography**	**Manipal-2015, AIPMT-1993**
The modern concept of gene is– **Functional unit of DNA**	**Haryana PMT-2004, Manipal-2003**
Locations on sites in the human DNA where single base DNA differences occur are called– **SNP**	**JCECE-2018**
The bonds that hold the two complementary strands of DNA together are– **Hydrogen bonds**	**JCECE-2018 / Rajasthan PMT-2011**
The complementary synthetic and random DNA are used as– **Passenger DNA**	**Manipal-2013**
DNA can be– **A-DNA, B-DNA, Z-DNA**	**BHU PMT (Mains)-2008, 2005**
McClintock is related to– **Transposons**	**BCECE-2006 / VMMC-2005 / AMU-2004**
Nitrogen base + Pentose sugar + Phosphate group is– **Nucleotide**	**AMU-2012**
DNA is present in– **Nucleus, Mitochondria, Chloroplast**	**CG PMT-2006 / BVP-2002 / Haryana PMT-1999**

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In DNA molecule at the 5' end there is a free– **Phosphate**	**MHT CET-07.10.2020 Shift-I**
When DNA is formed from RNA, it is called– **c-DNA**	**BHU PMT (Screening)-2011**
The anti-parallel nature of DNA refers to– **The opposite direction of the two strands**	**DUMET-2009**
Beadle and Tatum showed that each kind of mutant bread mould they studied lacked a specific enzyme. Their experiments demonstrated that– **Genes carry information for making proteins**	**DUMET-2009**
In DNA helix cytosine paired with guanine by– **Three H_2 bonds**	**DUMET-2001 / HP CET-2012 / Manipal-2010**
DNA is acidic due to– **Phosphoric acid**	**Haryana PMT-2008**
Stain used by Feulgen to stain DNA is– **Basic fuchsin**	**Haryana PMT-2008**
A, B, and Z are the three forms of DNA, in – **All three are right-handed, but the number of bases per turn in the three are different**	**VMMC-2015**
DNA unit is– **Nucleotide**	**CG PMT-2010**
The total nucleosomes are found in helical coil of 30 nm chromatin fibre is– **6**	**Rajasthan PMT-2000**
The barr body is observed in– **3% female neutrophils**	**AMU-1996**
Model of DNA structure was proposed by– **Watson and Crick**	**VMMC-2003 / J&K CET-2002**
Antiparallel strands of a DNA molecule means that– **The phosphate groups at the start of two DNA strands are in opposite position (pole)**	**BCECE-2013 / CMC Ludhiana-2009, AIPMT-2006**
A nucleoside is– **Purine/ pyramidine + sugar**	**BCECE-2007**
Unwinding of DNA is done by– **Helicase**	**Haryana PMT-2011**
Kappa particles are– **Submicroscopic granules formed by the folding of naked DNA**	**AMU-2003 , 2007**
Plasmids are the molecules of– **DNA**	**AMU-2001**
Jumping genes are known as – **Transposon**	**Manipal-2006**
The processes/technique that was used by Watson and Crick for giving double helical DNA model– **Franklin's X-ray diffraction**	**Manipal-2006**
Teminism related to– **RNA → DNA → RNA → Protein (Reverse transcription)**	**Manipal-2006**
Who was awarded Nobel Prize in 1959 for in vitro synthesis of polyribonucleotide. **Arthur Kornberg**	**UP CPMT-2011**
Mutant strains of pink mould better known a Drosophila of plant kingdom was produced by Beadle and Tatum with the help of– **X - rays**	**VMMC-2014**
The enzymes that are used to join bits of DNA– **Ligase**	**AIPMT-2002**
In the polynucleotide chain of DNA, a nitrogenous base is linked to the –OH of– **1′ C pentose sugar**	**NEET-2020 Phase-II**
When the centromere is situated in the middle of two equal arms of chromosomes, the chromosome is referred as– **Metacentric**	**NEET-2021**
Which DNA shows high degree of polymorphism in population and also the same degree of polymorphism in an individual, which is heritable from parents to children – **Satellite DNA**	**AIPMT (Re-Exam)-2015**

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DNA fragments are– **Negatively charged**	**NEET-2017**
One turn of the helix in a B-form DNA is approximately– **3.4 nm**	**AIPMT-2006**
Nucleotides are building blocks of nucleic acids. Each nucleotide is a composite molecule formed by– **Base-sugar-phosphate**	**AIPMT-2005**
In a DNA segment having six coils, there are 22 nitrogen base pairs linked by two hydrogen bonds. Total number of cytosine bases that are found in that segment is– **38**	**AP EAMCET-2008**
A genophore is made up of– **A single,naked, double stranded DNA**	**JIPMER-2008**
In DNA 20% bases are adenine. Total percentage of bases are pyrimidines– **60%**	**JIPMER-2019**
Nucleosome core is made of– **H_2A, H_2B, H_3 and H_4**	**AIPMT-1993**
A DNA with unequal nitrogen bases would most probably be– **Single stranded**	**AIPMT-1993**
An octamer of 4 histones complexed with DNA forms – **Nucleosome**	**AMU-2002 / AIPMT-1990**
The length of DNA helix in a typical nucleosome is– **200 bp**	**Karnataka CET-2020**
DNA, present in the nucleus, was named as 'Nuclein' by– **Friedrich Miescher**	**Karnataka CET-2018**
The two polynucleotide chain in DNA are– **Antiparallel**	**AIPMT-2007**
The length of DNA molecule greatly exceeds the dimensions of the nucleus in eukaryotic cells. How is this DNA accommodated– **Super-coiling in nucleosomes**	**AIPMT-2007**
A distinct mechanism that usually involves a short segment of DNA with remarkable capacity to move from one location in a chromosome to another is called– **DNA transposition**	**UP CPMT-2005**
Satellite DNA is useful tool in– **Forensic science**	**JIPMER-2014**
Assume that a DNA molecule is having three full helical turns and each turn with three guanines. Total number of double bonds that are possible between purines and pyrimidines in the above mentioned DNA molecule is– **21**	**TS EAMCET-30.07.2022 Shift-II**
Two molecule of DNA are sideways linked by– **Purine-pyrimidine hydrogen bond**	**UP CPMT-2014**
The structures that are present in core particle of nucleosome is– **Octamer of histone proteins**	**SRM JEEE-2018**
DNA or RNA segment tagged with a radioactive molecule is called – **Probe**	**AIPMT (Screening)-2010**
Nitrogen base which is only found in DNA is– **Thymine**	**Karnataka CET-2019**
Viable material of endangered species can be preserved by– **Gene bank**	**AIPMT-2000**
Length of one loop of B- DNA– **3.4 nm**	**AIPMT-2000**
Similarity in DNA and RNA is– **Both are polymer of nucleotides**	**AIPMT-2000**
Variations in proteins are due to– **Sequence of amino acids**	**AIPMT-1998**
Gene and cistron words are sometimes used synonymously because– **One gene contains one cistron**	**AIPMT-2001**
Searching of Genetic Material	
Separated bands of DNA are cut out from the agarose gel and extracted from gel piece. This step is known as– **Elution**	**TS EAMCET 10.05.2023 Shift-I**
Rediscoverer of Mendel's work was– **Hugo DeVries, Carl Correns and Erich von Tschermak**	**Rajasthan PMT-2004**

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A mutant strain of T_4-bacteriophage R-II, fails to lyse the E. coli but when two stains R-II^x and R-II^y are mixed then they lyse the E. coli. The possible reason may be– **Both strains have different cistrons**	**BHU PMT (Screening)-2010**
Taylor (1958) studied chromosome replication by using - **Radioactive Thymidine**	**CG PMT-2007**
Wilkins X-ray diffraction showed the diameter of the DNA helix as– **20 Å**	**CG PMT-2007**
The unequivocal proof of DNA as genetic material come from studies on a– **Bacterial virus (Bacteriophages)**	**Manipal-2015**
The key finding from Griffith's experiments using live and heat killed pathogenic bacteria is– **Genetic material can be transferred from dead to live bacteria**	**JCECE-2018**
Griffith in his experiment with Diplococcus pneumoniae discovered– **Transformation**	**MHT CET-06.10.2020 Shift-I**
In vitro synthesis of RNA and DNA was carried out first by– **Ochoa and Kornberg**	**Haryana PMT-2003**
In polytene chromosomes dark bands are visible. These bands are formed by the apposition of– **Chromomeres on chromonemata**	**AFMC-2006**
Genes which are not located within the nucleus are almost always found in– **Cytosol**	**CG PMT-2011**
Jumping genes in maize were discovered by– **Barbara McClintock**	**VMMC-2012 / MGIMS Wardha-2008, 2005, UP CPMT-2008 / Uttarakhand PMT-2007, UP CPMT-2003**
Heavier and lighter isotopic from of an element can be separated by the technique of– **Buoyant density centrifugation**	**DUMET-2008**
Phosphorus -32 emits– **β-particles**	**DUMET-2010**
Transformation experiment was first performed on the bacteria is– **Streptococcus pneumoniae**	**AIPMT-2002**
The term 'Nuclein' for the genetic material was used by– **Friedrich Miescher**	**NEET-2020 Phase-II**
A foreign DNA and plasmid cut by the same restriction endonuclease can be joined to form a recombinant plasmid using– **Ligase**	**NEET-2016 Phase-II**
The experimental proof for semiconservative replication of DNA was first shown in a– **Bacterium E.coli**	**NEET-2018**
In recent years, DNA sequences (nucleotide sequence) of mt-DNA and Y chromosomes were considered for the study of human evolution, because– **They are uniparental in origin and do not take part in recombination**	**AIPMT-2003**
Manipulation of DNA in genetic engineering became possible due to the discovery of– **Restriction endonuclease**	**AIPMT-2002**
Transfer of some genes from one bacteria to another bacteria through virus is known as – **Bacterial transduction**	**AIPMT-2002**
The transforming principle of *Pneumococcus* as found out by Avery, MacLeod and McCarty was– **DNA**	**AIPMT-1993**
The first step for genetically modifying an organism is– **Identification of DNA with desirable gene**	**AP EAMCET-24.09.2020 Shift-I**

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The result of the reaction/experiment carried out by Avery et. al. on Streptococcus pneumoniae has proved conclusively that DNA is genetic material– **Live 'R' strain + DNA from 'S' strain + DNAase**	**Karnataka CET-2014**
One gene-one enzyme relationship was established for the first time in– **Neurospora crassa**	**AIPMT-2007**
Work of Beadle and Tatum on Neuropora crassa proved that– **Every gene is responsible for specific enzymes**	**UP CPMT-2011**
In 1944, Avery, McCarty and MacLeod isolated a substance from heat killed virulent form of bacteria and added to non-virulent to virulent from this substance can be distroyed by– **DNAase**	**JIPMER-2015**
Qualities and Function of Genetic Material (DNA)	
Eukaryotic genes are monocistronic but they are split genes because– **Exons are interrupted by Introns**	**Karnataka CET-20.05.2023**
In a rDNA cloning experiment, which helps to identify and eliminate non-trnsformant normal Escherichia coli cells– **Selectable marker**	**AP EAPCET-11.05.2023, Shift-II**
The number of nitrogen base pairs in haploid human DNA and Escherichia coli DNA respectively are– **3.3×10^9 bp and 4.6×10^6 bp**	**AP EAPCET-11.05.2023, Shift-II**
The first artificial rDNA was constructed by using a native plasmid of the organisms that is– **Salmonella typhimurium**	**AP EAPCET-11.05.2023, Shift-II**
The chemical nature of chromatin is as– **Nucleic acids, histone and non- histone proteins**	**WB JEE-2009**
Out of A-T, G-C pairing, bases of DNA may exist in alternate valency state owing to arrangement called– **Tautomerizational mutation**	**WB JEE-2009**
Genetic information is carried by long chain macromolecules made up of– **Nucleotides**	**Uttarakhand PMT-2007**
Antiparallel strands of a DNA molecule means that– **The phosphate groups at the start of two DNA strands are in opposite position (pole)**	**JCECE-2009**
Small extrachromosomal circular self replicating DNA that can carry genes into host organism is called– **Plasmid**	**MGIMS Wardha-2007**
Geneticist plots the relative locations of genes on chromosomes by- **Determine the frequency of crossing over**	**JIPMER-1998**
A series of experiments were conducted by Frederick Griffith in 1928, on transforming principle with– **Streptococcus pneumoniae**	**Karnataka CET-2022**
The autosomes are– **Somatic chromosomes**	**Rajasthan PMT-1998**
DNA is a better genetic material than RNA because of– **Presence of Thymine**	**AP EAMCET-25.09.2020 Shift-II**
Prokaryotic genetic system has– **DNA but no histone**	**VMMC-2007**
Considering the average molecules of a base to be 500 Da, the molecular mass of a double stranded DNA of 10 base pairs is– **10 kDa**	**KVPY SA-2015**
Recognition sequence in Eco RI is– **GAATTC**	**MGIMS Wardha-2013**
Flavr savr variety of tomato is a– **Transgenic crop**	**MGIMS Wardha-2013**
The term genetic engineering is used for– **Recombinant DNA technique**	**MGIMS Wardha-2003**
DNA strands on a gel stained with ethidium bromide when viewed under UV radiation, appear as– **Bright orange bands**	**NEET-2021**

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In gel electrophoresis, separated DNA fragments can be visualized with the help of– **Ethidium bromide in UV radiation**	**NEET-2020 Phase-I**
If DNA contained sulfur instead of phosphorus and proteins contained phosphorus instead of sulfur, what would have been the outcome of Hershey and Chase experiment– **Radioactive sulfur in bacterial cells**	**NEET (Re-Exam)-04.09.2022**
"DNA is the sole genetic material in bacteriophage" proved by– **Hershey and Chase**	**NEET (Odisha)-2019**
The association of histone H_1 with a nucleosome indicates– **The DNA is condensed into a Chromatin fibre**	**NEET-2017**
Chromosomes in a bacterial cell can be 1–3 in number and– **Are always circular**	**AIPMT-2003**
Satellite of chromosome is– **Rich in RNA and deficient in DNA**	**AIIMS-2011**
A nucleosome is a portion of the chromonema containing– **Both DNA and histones**	**Karnataka CET-2005**
DNA is mainly found in– **Nucleus only**	**Punjab MET-2010**
Most of the mutations are– **Harmful and recessive**	**AIPMT-2000**
If one strand of DNA has the nitrogenous base sequence as ATCTG, what would be the complementary RNA strand sequence– **UAGAC**	**AIPMT (Screening)-2012**
Segments of DNA which can move in genome are called– **Transposons**	**AIPMT-1998**
The RNA	
Purines in RNA are– **Adenine and guanine**	**J&K CET-2002**
Against the codon 5' UAC 3', what would be the sequence of anticodon on tRNA– **5'- GUA -3'**	**NEET (Re-Exam)-04.09.2022**
Form of RNA has a structure resembling clover leaf is– t-RNA	**Manipal-2007 / AIPMT-2004**
The biosynthesis of ribosomal RNA occurs in– **Nucleolus**	**NEET-2020 Phase-II**
The role of RNA polymerase III in the process of transcription in eukaryotes is **Transcribes tRNA, Sc RNA,5S rRNA and snRNA**	**NEET-2021**
Balbiani rings are sites of– **RNA and protein synthesis**	**AIPMT (Re-Exam)-2015, WB JEE-2009**
Non-membranous nucleoplasmic structures in nucleus are the site for active synthesis of– **rRNA**	**NEET (Odisha)-2019**
Many ribosomes may associate with a single mRNA to form multiple copies of a polypeptide simultaneously. Such strings of ribosomes are termed as– **Polysome**	**NEET-2018**
The RNAs that should be most abundant found in animal cell is– **r-RNA**	**NEET-2017**
Ribotide is– **Ribose + Uracil + Phosphate**	**JIPMER-2018**
Telomerase is a– **Ribonucleoprotein**	**AIPMT-2005**
Soluble RNA is called– **t - RNA**	**JIPMER-2006**
The back bone of RNA consists of the sugar that is– **Ribose**	**JIPMER-2008 / DUMET-2005, UPCPMT-2003, BHU PMT (Screening)-2003**
There are special proteins that help to open up DNA double helix in front of the replication fork. These proteins are– **DNA gyrase**	**AIPMT-1994**
RNA is found in– **All living cells**	**AIIMS-27.05.2018 Shift-II**
In RNA, thymine is replaced by– **Uracil**	**AIPMT-1992**

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Total types of Non-genetic RNA is – **Three types (rRNA, tRNA and mRNA)**	**JIPMER-2006, Haryana PMT-2002**
Heterogeneous nuclear RNA (hnRNA) is converted to mRNA by– **Splicing, Capping, Tailing**	**AMU-2014**
Activation of an amino acid during protein synthesis requires a participation of specific molecule of– **t-RNA**	**J&K CET-2003**
The transfer continuously from nucleus to cytoplasm is– **RNA**	**Rajasthan PMT-2001**
Synthesis of mRNA and tRNA occurs in– **G_1 – phase**	**JCECE-2014**
The RNA that picks up specific amino acid from the amino acid pool in the cytoplasm to the ribosome during protein synthesis is– **t-RNA**	**Kerala PMT-2013**
The constitute about 10-20% of total cellular RNA is– **t- RNA**	**UP CPMT-2005**
Ribozymes are– **Catalytic RNA, Non-Protein enzymes**	**TS EAMCET-10.08.2021 Shift-I**
A nicked RNA molecule can be ligated by– **T4 RNA ligase**	**SRM JEEE-2018**
The common point of similarity between DNA and RNA is– **Both are polymers of nucleotides**	**Karnataka CET-2006**
Specific radioactive identification of ribosomal RNA can be achieved by using C^{14} labelled– **Uracil**	**JIPMER-2015**
Ribosomal RNA is actively synthesized in– **Nucleolus**	**AIPMT (Screening)-2012**
Types of RNA polymerase required in nucleus for RNA synthesis– **3**	**AIPMT-2001**
Acts as a catalyst in a bacterial cell is– **23 S rRNA**	**AIPMT (Screening)-2011**
Replication & Transcription	
During transcription the DNA strand with 3' → 5' polarity of the structural gene always acts as a template because– **Enzyme DNA dependent RNA polymerase always catalyse the polymerization in 5' →3' direction**	**Karnataka CET-20.05.2023**
There are having the ability to replicate within the bacterial cell, independent of control of chromosomal DNA– **Plasmids and bacteriophage**	**AP EAPCET-22.05.2023, Shift-I**
The DNA polymerase of prokaryotes that have both 3-5 and 5-3 exonuclease activity is– **DNA polymerase - I**	**AMU-2015**
Certain RNA viruses carry a gene for an enzyme that uses viral RNA as a template in the synthesis of DNA. This enzyme is– **Reverse transcriptase**	**AMU-2002**
Exon part of m-RNAs have code for– **Proteins**	**AIPMT-2002**
DNA replication is– **Semiconservative**	**Tripura JEE-2017, VMMC-2006**
From a DNA template with the sequence CTGATAGC, the mRNA sequence formed would be– **GACUAUCG**	**Assam CEE-2014**
Sigma factor is related to– **RNA polymerase**	**BVP-2005, Haryana PMT-2004**
DNA multiplication is called– **Replication**	**BVP-2001**
The enzyme used to join the DNA fragments is– **DNA ligase**	**Kerala PMT-2009**
During transcription, if the nucleotide sequence of the DNA strand that is being coded is ATACG, then the nucleotide sequence in the mRNA would be– **UAUGC**	**AIPMT-2004**

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Split genes are made up of exons and introns. The coding sequences are called as– **Exons**	**BVP-2000**
Restriction enzymes recognize and cleave/cut at specific site of the molecule of– **DNA**	**AMU-1995**
Okazaki fragments form in– **Lagging strand**	**AIIMS-2000**
The sequence that controls the copy number of the linked DNA in the vector, is termed– **Ori site**	**NEET-2020 Phase-I**
Name the enzyme that facilitates opening of DNA helix during transcription– **RNA polymerase**	**NEET-2020 Phase-I**
E. coli has only 4.6×10^6 base pairs and completes the process of replication within 18 minutes; then the average rate of polymerisation is approximately– **2000 base pairs**	**NEET-2020 Phase-II**
The "Only enzyme" that has "Capability" to catalyse Initiation, Elongation and Termination in the process of transcription in prokaryotes is– **DNA dependent RNA polymerase**	**NEET-2021**
The most common mechanism of genetic variation in the population of sexually reproducing organism is– **Recombination**	**AIPMT-2015**
The initiation and termination that factors are involved in transcription in Eukaryotes is– **σ and ρ, respectively**	**NEET (Odisha)-2019**
DNA replication in bacteria occurs– **Prior to fission**	**NEET-2017**
The mRNA can be transcripted as– **AUG, UGA, UUU**	**JIPMER-2018**
During transcription, the DNA site at which RNA polymerase binds is called as- **Promoter**	**J&K CET-2014, Uttarakhand PMT-2007, AIPMT-2003**
During translation initiation in prokaryotes, a GTP molecule is needed in– **Association of 30 S-mRNA with formyl met- tRNA**	**AIPMT-2003**
The reunites that exon segments after RNA splicing is– **RNA ligase**	**AIPMT-2002**
The restriction enzyme was discovered by – **Nathan, Arber and Smith**	**Tripura JEE-2017**
During DNA replication, supercoilling is relaxed by– **DNA topoisomerase**	**JIPMER-2019**
During DNA replication, the strands separate by– **Helicase**	**VMMC-2006, AIPMT-1993**
In a eukaryotic transcription and translation takes place in– **Nucleus and cytoplasm**	**MHT CET-2019**
During replication of DNA, the two strands of the double helix are separated from each other under the influence of enzyme– **Rep-protein**	**MHT CET-2016**
During DNA replication, the addition of nucleotides on the lagging strand occurs– **Discontinuously**	**MHT CET-2015**
Semiconservative method is associated with– **DNA replication**	**MHT CET-2009**
The first step in DNA replication is– **Formation of template strand**	**MHT CET-2009**
m–RNA synthesis is known as– **Transcription**	**MHT CET-2004**
Polymerisation of DNA nucleotides during the synthesis of lagging strand occurs in– **5' → 3' direction**	**Karnataka CET-2017**
The enzyme responsible for transcription is– **RNA polymerase**	**CG PMT-2005**
The transcription unit extends from– **TATA box to stop codon**	**DUMET-2006**

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cDNA probes are copied from the messenger RNA molecules with the help of– **Reverse transcriptase**	**AIIMS-2005**
The enzyme, which helps to cut one strand of DNA duplex to release tension of coiling of two strands is– **Topo-isomerase**	**JCECE-2007**
If the sequence of bases in DNA is ATTCGATG, then the sequence of bases in its transcript will be– **UAAGCUAC**	**AIPMT-1995**
In split genes, the coding sequences are called– **Exons**	**AIPMT-1995**
The process by which language of DNA is converted into language of m-RNA is called– **Transcription**	**J&K CET-2001**
DNA chromosome replication takes place during– **S-phase**	**MGIMS Wardha-2006**
The first suggest, the conservative model of DNA replication is– **Meselson and Stahl**	**DUMET-2007**
The place where RNA polymerase attaches with the DNA is called– **Promoter site**	**BVP-2006**
The heavy isotope used for proving semi-conservative replication of DNA by Meselson and Stahl was– **^{15}N**	**Kerala PMT-2013**
During replication of retrovirus is– **Viral RNA is introduced into the host cell**	**Karnataka CET-2018**
When DNA replication starts– **The hydrogen bonds between the nucleotides of two strands break**	**Karnataka CET-2009**
DNA gyrase, the enzyme that participates in the process of DNA replication is a type of– **DNA Topoisomerase**	**Karnataka CET-2010**
During transcription, RNA polymerase holoenzyme binds to a gene promoter and assumes a saddle-like structure. DNA-binding sequence is– **TATA**	**AIPMT-2007**
Molecular basis of organ differentiation depends on the modulation in transcription by– **Transcription factor**	**AIPMT-2007**
The Okazaki fragments in DNA chain growth– **Polymerize in the 5'-to-3' direction and explain 3'- to 5' DNA replication**	**AIPMT-2007**
A eukaryotic gene contains two kinds of base sequences. Which plays an important role in protein synthesis. **Exons**	**JIPMER-2009**
c-DNA is formed from m- RNA by which enzyme– **Reverse transcriptase**	**UP CPMT-2005**
Sequence of DNA (non-coding) is known as– **Introns**	**UP CPMT-2005**
Rho factor is associated with– **RNA polymerase**	**TS EAMCET-10.08.2021 Shift-I**
When a radioactive DNA of bacterium E.coli (incorporated with N^{15} isotope) was placed in medium containing N^{14} isotope for three generation the percentage of radioactive strand is– **25%**	**UP CPMT-2014**
In eukaryotic cell transcription, RNA splicing and RNA capping take place inside the– **Nucleus**	**AIPMT (Mains)-2010**
Semiconservative replication of DNA was first demonstrated in– **Escherichia coli**	**AIPMT-2009**
Removal of introns and joining the exons in a defined order in a transcription unit is called– **Splicing**	**AIPMT-2009**
In Prokaryotes, the transcription of DNA is initiated with the help of– **Sigma factor**	**Karnataka CET-2019**
DNA polymerase enzyme is required for synthesis of– **DNA from DNA**	**JIPMER-2004**

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Intron transcripts in heterogenous nuclear RNA (in RNA) are removed and exon transcripts are joined together under the direction of protein complexes. These complexes are– **Spliceosomes**	**AP EAMCET-2007**
Method of DNA replication in which two strands of DNA separates and synthesize new strands is called as – **Semiconservative**	**AIPMT-2000**
Initiation codon is– **AUG**	**AIPMT-2000**
Ribosomes are engaged in protein synthesis in animal cell– **Ribosomes which occur on nuclear membrane and E.R**	**AIPMT-2000**
Removal of RNA polymerase III from nucleoplasm will effect the synthesis of– **t-RNA**	**AIPMT (Screening)-2012**
The exercise that a control over transcription is– **Regulator**	**AIPMT-1998**
Genetic Code and Translation	
Polymerization of amino acids to form polypeptide is called as– **Translation**	**TS EAMCET 10.05.2023 Shift-I**
At the end of translation the release factor binds to the codon to complete polypeptide from the ribosome– **U A A**	**AP EAPCET-22.05.2023, Shift-I**
A codon is made up of– **Three nucleotides**	**DUMET-2005, UP CPMT-2003**
A eukaryotic gene contains two kinds of base sequences. The plays that an important role in protein synthesis is– **Exons**	**VMMC-2012, UP CPMT-2008, Uttarakhand PMT-2008**
The scientist who was awarded Nobel prize in 1959 for in vitro synthesis of polyribonucleotide is– **Ochoa and Kornberg**	**J&K CET-2006**
One gene-one enzyme relationship was established for the first time in– **Neurospora crassa**	**Rajasthan PMT-2010**
Out of 64 codons, 61 codons code for 20 types of amino acid it is called– **Degeneracy of genetic code**	**AIPMT-2002**
The process of translation of mRNA to proteins begins as soon as– **The small subunit of ribosome encounters mRNA**	**NEET-2022**
After a mutation at a genetic locus, the character of an organism changes due to the change in– **Protein structure**	**AIPMT-2004**
In a mutational event, when adenine is replaced by guanine, it is a case of– **Transition**	**AIPMT-2004**
The first phase of translation is– **Aminoacylation of tRNA**	**NEET-2020 Phase-I**
The equivalent of a structural gene is– **Cistron**	**NEET-2016 Phase-II**
The features of genetic code that does allow bacteria to produce human insulin by recombinant DNA technology is– **Genetic code is nearly universal**	**NEET-2019**
Protein with 333 amino acids and the base at position 901 is deleted such that the length of the RNA becomes 998 bases, total number of codons will be altered–**33**	**NEET-2017**
Degeneration of a genetic code is attributed to the– **Third member of a codon**	**AMU-2007 / AIPMT-2003**
In the genetic code dictionary, total number of codons are used to code for all the 20 essential amino acids is– **61**	**AIPMT-2003**
Stop codons are– **UAA, UGA, UAG**	**JIPMER-2008, BHU PMT (Screening)-2007, MGIMS Wardha-2005**

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The RNA that pick up specific amino acid from amino acid pool in the cytoplasm to ribosome during protein synthesis is called– **tRNA**	**AIPMT-1997**
The codons causing chain termination are– **UAG, UGA, UAA**	**AIPMT-1997**
If the DNA codons are ATGATGATG and a cytosine base is inserted at the beginning, then result will– **CAT, GAT, GAT, G**	**Punjab MET-2005**
Anticodon is an unpaired triplet of bases in an exposed position of– **tRNA**	**AIPMT-1995**
Initiation codon for protein synthesis (in eukaryotes) is– **AUG**	**AIPMT-1993**
In the genetic dictionary, there are 64 codons as– **Genetic code is triplet**	**AIPMT-1990**
Genetic code consists of– **Adenine and guanine, Cytosine and uracil, Cytosine and guanine**	**AIPMT-1988**
Codons of alanine is– **GCU, GCC, GCG**	**AIIMS-27.05.2019 Shift-II, AIIMS-27.05.2018 Shift-II**
If the sequence of bases in the coding strand of a double stranded DNA is 5' GTTCGAGTC -3' the sequence of bases in its transcript will be– **5'-GUUCGAGUC-3'**	**AIIMS-2016**
The binding site of tRNA with mRNA and amino acids respectively are– **mRNA with anticodon loop and amino acid with CCA end**	**AIIMS-2009**
If in a gene encoding a polypeptide of 50 amino acids, 25th codon (UAU) is mutated to UAA because– **UAA is a termination codon which will stop the polypeptide synthesis**	**AIIMS-2015**
The codons codes for the same information as UGC– **UGU**	**AIIMS-2003**
Initiation codon in eukaryotes is– **AUG**	**AIPMT-1999, 1994**
The sequence of nitrogen bases in a portion of a coding segment of DNA was AAT GCT TAG GCA. The sequence of nitrogen bases in the corresponding region of the transcripted mRNA is– **UUA CGA AUC CGU**	**Karnataka CET-2005**
During protein synthesis AUG functions as the initiator codon in mRNA. The anticodon on the tRNA molecule that picks up and brings the amino acid specified by this codon– **UAC**	**Karnataka CET-2005**
The types of RNA that carries amino acids towards ribosome during translation– **tRNA**	**Karnataka CET-2020**
Several of the amino acids are coded by more than one codon in – **Codon degeneracy**	**KVPY (SA)-05.11.2017**
The terminator codons begin with the nucleotide of– **Uracil**	**Karnataka CET-2006**
The 3'-5' phosphodiester linkages inside a polynucleotide chain serve to join– **One nucleotide with another nucleotide**	**AIPMT (Mains)-2010**
The amino acids is coded by single codon is– **Tryptophan**	**Karnataka CET-2019**
m-RNA is synthesised on DNA template, the direction is– **5' → 3'**	**AIPMT-2001**
DNA Fingerprinting and Human Genome Project	
Labelled probes are used in DNA fingerprinting for– **Hybridisation**	**AP EAPCET-11.05.2023, Shift-I**
The function of polymerase chain reaction (PCR) is– **DNA amplification**	**UP CPMT-2003**
A sequential expression of set of human gene occurs when steroid molecule binds to the– **DNA sequence**	**Manipal-2012**

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The applications of DNA finger printing technique are EXCEPT– **To study chromosomal types**	**MHT CET 5.10.2020 Shift-I**
On the basis of Human Genome Project report; human genome contains is– **30,000 genes**	**Haryana PMT-2002**
The total number of nitrogenous bases in human genome is estimated to be about– **3.1 billion**	**Haryana PMT-2004**
VNTRs is used in– **DNA fingerprinting**	**AMU-2002**
The device which can remove particulate matter present in the exhaust from a thermal power plant is– **Electrostatic Precipitator**	**NEET-2022**
DNA polymorphism forms the basis of– **Both genetic mapping and DNA finger printing**	**NEET-2022**
The enzymes that cut the DNA molecule at specific nucleotide sequence is– **Restriction endonuclease**	**SRM JEEE -2017**
Molecular glue also called– **DNA ligase**	**JIPMER-2019**
The first step in the Southern Blot technique is– **Digestion Of DNA with restriction enzymes**	**AIIMS-2004**
PCR is associated with– **DNA cloning, Amplification of DNA, DNA selective replicaiton**	**JCECE-2014**
The chief enzyme that is involved in PCR technique is– **Taq polymerase**	**TS EAMCET-29.09.2020 Shift-I**
Thermal cycler is used in this reaction– **PCR (Polymerase Chain Reaction)**	**BVP-2008, Uttrakhand PMT-2007**
The steps in DNA fingerprinting technique are labelled VNTR probes used– **During hybridization**	**Karnataka CET-2018**
In genetic fingerprinting the 'probe' refers to– **A radioactively labelled single stranded DNA molecule**	**Karnataka CET-2010**
The main aim of the human genome project is– **To identify and sequence all the genes present in human DNA**	**Karnataka CET-2010**
The fragments of DNA formed after treatment with endonucleases are separated by this technique– **Electrophoresis**	**AP EAMCET-2005**
Process which separation of DNA fragments according to their size – **Gel electrophoresis**	**AIPMT-2008**
Probes, used in DNA fingerprinting, are initially– **Mini-satellite**	**JIPMER-2014**
Key tools r–DNA technology are– **Molecular scissors, P^{BR} 322**	**AP EAMCET-25.04.2018 Shift-II**
According to Human Genome Project (HGP), the total number of genes in human genome is estimated at 30,000, the number of genes present on Y-chromosome are– **231 genes**	**Karnataka CET-2019**
Regulation of Gene Expression	
Plasmids are suitable vectors for gene cloning because– **These are small circular DNA molecules with their own replication origin site**	**AFMC-2007**
Sigma factor is related to– **RNA polymerase**	**Manipal-2003**
The enzyme that is used to remove the introns is– **Ribozyme**	**CMC Vellore-2014**
Skin colour is controlled by– **3 pairs of gene**	**JIPMER-2013**
The largest gene in man is– **Dystrophin**	**JIPMER-2013**

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The terminator gene technology causes– **Failure of seed setting after one generation**	**Rajasthan PMT-2009**
A functional complex comprising a cluster of genes including structural gene, a promoter gene, an operator region and a regulatory gene was discovered by– **Jacob and Monad (1961)**	**Uttarakhand PMT-2006**
During polynucleotide synthesis by the enzymes, in the case that elongation occurs in 5 → 3 direction is– **DNA polymerase, RNA polymerase, Reverse transcriptase**	**AMU-2014**
The function of restriction enzyme is– **Cleavages of DNA**	**Rajasthan PMT-2001**
Central dogma in molecular biology is– **DNA→ RNA→ Protein**	**WB JEE-2015**
Restriction endonuclease – Hind II always cuts DNA molecules at a particular point by recognizing a specific sequence of– **Six base pairs**	**Kerala PMT-2013**
Genes that are involved in turning on or off the transcription of a set structural genes are called– **Regulatory genes**	**Punjab MET-2010**
RNA interference which is employed in making tobacco plant resistant to Meloidogyne incognita is essentially involved in– **Preventing the process of translation of mRNA**	**Karnataka CET-2014**
Differentiation of organs and tissues in a developing organism, is associated with– **Differential expression of genes**	**AIPMT-2007**
A sequential expression of a set of human genes occurs when a steroid molecule binds to the– **DNA sequence**	**AIPMT-2007**
The Lac Operon	
The Lac-Operon model was elucidated by– **Francois Jacob and Jacque Monod**	**Karnataka CET-20.05.2023**
Lac Operon concept is introduced by these bio chemist and geneticist is– **Monod & Jacob**	**AP EAPCET-23.05.2023, Shift-II**
In operon concept, regulator gene functions as– **Repressor**	**WB JEE-2006**
Operon unit consists of– **Regulator, structural, operator and promoter gene**	**Manipal-2013, BVP-2010**
Substances will repress the lac operon is– **Glucose**	**KVPY SB & SX-2015**
Co-repressor binds with repressor in – **Negative Operon**	**BHU PMT (Screening)-2010**
Number of structural genes in lac operon is– **3**	**AP EAMCET-25.09.2020 Shift-II**
Jacob and Monod studied lactose metabolism in E. coli and proposed operon concept. Operon concept applicable for– **All prokaryotes**	**AIPMT-2002**
In E. coli, during lactose metabolism repressor binds to– **Operator gene**	**AIPMT-2002**
An environmental agent, the triggers that transcription from as operon, is a– **Inducer**	**VMMC-2013, AIPMT-1995**
When Escherichia coli cells are cultured in a medium where Lactose is absent, the 'i' gene of Lac Operon continues to produce repressor mRNA, because it is– **a constitutive gene**	**Karnataka CET-2020**
The Lac Operon is turned on when allolactose molecules bind to– **Repressor protein**	**Karnataka CET-2012**

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06.

EVOLUTION

6.1 Origin of Life

- In Miller's experiment, he used a mixture of CH_4, NH_3, H_2 and water vapour in a closed flask to mimic early earth conditions. The temperature at which this flask was kept– **800^{0}C**
- Abiogenesis theory of origin of life supports– **Spontaneous generation**
- ..... proposed that the first form of life could have come from pre-existing non-living organic molecules– **Alfred Wallace**
- According to one of the most widely accepted theories, earth's atmosphere before origin of life was– **Reducing with oxygen absent in O_2 form**
- The concept of ..... is based on possible origin of life by combination of chemicals under suitable environment conditions– **Chemical evolution**
- Theory of abiogenesis or spontaneous generation was disapproved by– **Louis Pasteur**
- From the point of view of early chemical evolution that preceded the origin of life on earth, the simple organic molecules formed were– **Sugars, Amino acids, Purines and pyrimidines**
- Earth was supposed to have been formed about-**4.5 Billion year ago**
- In the Miller's experiment ..... the groups of gases were used to simulate primitive atmosphere– **NH_3, CH_4, H_2, water vapour**
- The first life originated– **In water**
- According to some early Greek philosophers life can transfer from planet to planet in form of a unit are called as– **Spores**
- Fact can best support that the earth is very old– **Fossilized earlier life forms**
- The swan neck flask experiment of Louis Pasteur proves– **Life cannot be originated from decaying and rotting matter**
- Most advanced theory of origin of life is that of– **Haldane and Oparin**
- Theory of spontaneous creation– **Van Helmont**
- One of the greatest advocates of the theory of special creation– **Father Saurez**
- Coacervates– **Mixtures of ammonia, carbohydrates and water**
- The first form of life arose slowly through evolutionary forces from non-living molecules by– **Abiogenesis**
- One of the possible early sources of energy were– **UV rays & lightning**
- According to Oparin, was not present in the primitive atmosphere of the ease– **Oxygen**
- Evolution is– **History and development of a race alongwith variations**
- …… demonstrated that life comes from life with the help of flask with boiled broth– **Pasteur**
- Experiment to prove that synthesis of organic compounds formed the basis of origin of life was performed by– **Oparin**
- ..... amino-acids was found to be synthesized Miller experiment- **Alanine**
- Miller performed experiment to prove abiogenetic molecular evolution of life. That molecule was not present in Miller's experiment– **Oxygen**
- That organisms develop from pre-existing organisms, said by– **Louis Pasteur**
- Compounds were formed in the direction of the origin of life– **Proteins, nucleic acid**
- Stanley Miller synthesized in his experiment– **Amino acid**
- Miller synthesized simple amino-acid from– **Hydrogen, methane, ammonia, water**
- Primitive atmosphere was made up of the mixture of– **Hydrogen, steam, methane, ammonia**
- On the earth surface, reducing atmosphere changed into oxidizing atmosphere with the release of free oxygen. This took place due to the– **Evolution of oxygenic photoautotrophs**

6.2 Evolution of Life Forms – A Theory

- Fitness according to Darwin refers to– **Reproductive fitness of an organism**
- Alfred Wallace worked in– **Malay Archipelago**
- The theory of natural selection was given by– **Charles Darwin**
- Presence of different types of beaks in finches of Galapagos island adapted to different feeding habits provides evidence for– **Natural selection**
- Approximate age of earth (in million years) is– **4000**
- According to Darwin, fitness refers to– **Ability to survive and reproduce**
- Species are differentiated on the basis of– **Reproductive isolation**
- Major defect of Darwinism was– **Nondescription of reason for variations**
- Based on the observations, Charles Darwin concluded that– **The existing life-forms share similarities with life forms that existed millions of years ago**
- Name of the ship in which charles Darwin went for his expedition– **H.M.S. Beagle**
- Darwin explained origin of species through– **Natural selection**
- Darwin's Theory of Natural Selection was based on– **Struggle for existence and survival of the fittest**
- If population of a species is transferred to more suitable environment then it will show– **More individuals would survive**
- The Finches of Galapagos islands provide an evidence in favour of– **Biogeographical Evolution**
- One major criticism of Darwin's theory is that– **It does not explain variations with heredity**

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- The two key concepts of Darwinian theory of evolution are– **Branching descent and natural selection**
- The common ancestor of all the modern reptiles birds and dinosaurs is– **Sauropsids**

6.3 What are the Evidence for Evolution

- The similarity of bone structure in the forelimbs of many vertebrates is an example of– **Homologous**
- The wings of a bird and the wings of an insect are– **Analogous structures and represent convergent evolution**
- Evolutionary convergence is development of– **Common set of characters in group of different ancestry**
- Golden age of reptiles was– **Mesozoic era**
- Periods of cenozoic era are– **Quaternary and Tertiary**
- The preserved fossil remains of Archaeopteryx show that– **Reptiles gave rise to birds**
- The most evident source of evolution is– **Fossils**
- Evidence for evolution from fossils belong to the– **Paleontology**
- ..... set includes structures formed as a result of divergent evolution– **Forelimbs of man and wings of bat**
- Organs with anatomical similarities, but performing different functions describes the– **Homologous structure**
- Development of a common set of characteristics in groups of different ancestry – **Evolutionary convergence**
- The eye of octopus and eye of cat show different patterns of structure, yet they perform similar function. This is an example of– **Analogous organs that have evolved due to convergent evolution**
- ..... phenomena supports Darwin's concept of natural selection in organic evolution– **Prevalence of pesticide resistant insects**
- Replacement of the lighter-coloured variety of peppered moth (Biston betularia) to its darker variety (Biston carbonaria) in England is the example of– **Natural selection**
- The true black melanic forms escaped unnoticed so they managed to survive resulting in more population of black moths as observed in peppered moth proves that– **Industrial melanism**
- Speciation within same areas by reproductive isolation– **Sympatric**
- Ancestor is shared by birds, crocodiles and dinosaurs– **Thecodonts**
- Connecting link between reptiles and mammals– **Platypus**
- Phenomenon of industrial melanism demonstrates– **Natural selection**
- Tasmanian wolf is a marsupial while wolf is a placental mammal. This shows– **Convergent evolution**
- The presence of vestigial organs in man supports– **The theory of evolution, but not Lamarck's theory of inheritance of acquired characters**
- For natural selection the important factor is– **Variation**
- Flying squirrel and flying phalanger show– **Convergent evolution**
- Dinosaurs suddenly disappeared from the earth about– **65 mya (million years ago)**
- The first true cellular form of like appeared on earth about– **2k mya**
- The resistant varieties are being evolved in much lesser time than before, it is– **Anthropogenic activities**
- The important consequence of geographical isolation is– **Speciation through reproductive isolation**
- Divergent evolution is– **Homologous structure**
- Examples of convergent evolution are– **Sweet potato and potato**
- Phenomenon of 'industrial melanism' demonstrates– **Natural selection**
- One provides direct and solid evidence in favour of organic evolution through ages– **Palaeontology/fossils**
- Wings of bat/bird and insect show– **Analogy**
- In some organisms the existence of analogous structures (wings of insect and bat, jointed legs of insect and vertebrates) is due to phenomenon of– **Convergent evolution**
- Darwin's finches provide an excellent evidence in favour of organic evolution. These are related to – **Biogeography**
- Organs having similar functions but different origin and development are known as– **Analogous organs**
- Fossilization can occur where– **Animals are buried and preserved by natural process**
- In some organisms the existence of homologous structures in due to phenomenon of– **Divergent evolution**
- Industrial melanism is an example of– **Protective resemblance with the surrounding**
- The animal that explains industrial melanism is– **Winged Moth**
- An important evidence in favour of organic evolution is the occurrence of– **Homologous and vestigial organs**
- Best explains the atavism, is– **Long, thick and dense hair**
- Two species of different genealogy come to resemble each other as a result of adaptation, the phenomenon is termed– **Convergent evolution**
- Evolutionary convergence is characterized by– **Development of a common set of characteristics in groups of different ancestry**
- Fossil X can be considered to have evolved earlier than fossil Y if– **Y has vestigial structures that are homologous to functional structures in fossil X**
- A baby has been born with a small tail. It is the case exhibiting– **Atavism**

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- The phenomenon industrial melanism proved that– **The population of grey moths decreased during industrial revolution by natural selection**

6.4 What is Adaptive Radiation

- The diversity in the type of beaks of finches adapted to different feeding habits on the Galapagos Island, as observed by Darwin, provides evidence for– **Origin of species by natural selection**
- Adaptive radiation refers to– **Evolution of different species from a common ancestor**
- Parallelism is– **Adaptive convergence of closely related groups**
- Darwin finches from various islands of Galapagos island differed in size and shape of bill due to– **Adaptive radiation**
- One of the important consequences of geographical isolation is– **Speciation through reproductive isolation**
- The evolution of numerous species, such as Darwin's finches, from a single ancestor is called– **Adaptive radiation**
- Australian marsupials are a good example of– **Adaptive radiation**
- Shows adaptive radiation is– **Disruptive selection**

6.5 Biological Evolution

- By the statement 'survival of the fittest', Darwin meant that– **The species most adaptable to changes survives**
- According to Lamarckism, long necked .....evolved because of stretching of necks over many generations by short necked ones– **Giraffes.**
- The evidences that does not favour the Lamarchian concept of inheritance of acquired characters– **Melanisation in peppered moth**
- "Human population grows in geometric ratio while food materials increase in arithmetic proportion." It is a statement from– **Malthus**
- Variations may or may not be inherited from parents to offspring through genes all the except– **Darwinism explains**
- The key concept of Darwin theory of evolution– **Branching descent, Natural selection**
- Closely related, morphologically similar, reproductively isolated sympatric populations are designated as– **Sibling species**
- The factors involved in the formation of new species are – **Isolation and variation**
- Lamarck's theory of evolution is also called– **Inheritance of acquired characters**
- Biological concept of species is mainly based on– **Reproductive isolation**
- There would be no evolution if– **Genetic variations were not found among members of population**

6.6 Mechanism of Evolution

- Inheritable factors influence phenotypes this statement is given by – **Mendel**
- Amphibians were dominant during ..... period– **Carboniferous**
- Single step large mutation leading to speciation is also called– **Saltation**
- Mutations, discovered by Hugo deVries, are– **Random and directionless**
- Transfer of genes from one gene pool to another is– **Gene flow**
- Hugo deVries gave his mutation theory on organic evolution while working on– **Oenothera lamarckiana**
- Single step large mutations leading to speciation is also called– **Saltational speciation**
- Extinct animal shows evidences of evolution– **Archaeopteryx**
- Mutations are considered raw materials of evolution because they– **Contribute to new variations**
- De Vries theory of mutation is– **Not opposed to natural selection theory**
- According to the theory of mutation by Hugo de Vries– **Both small and large mutation cause variation in species**
- A highly competitive groups of animals of same species are living in a highly variable environmental conditions. The type of natural selection that is going to operate on them is– **Disruptive selection**

6.7 Hardy-Weinberg Principle

- The change in gene frequency occurred in small population by chance is – **Genetic drift**
- Frequency of an allele may change in isolated population– **Genetic drift**
- Genetic drift operates in– **Small population**
- Random change in gene frequency is called– **Genetic drift**
- Change in gene frequency of population due to chance is– **Genetic drift**
- Hardy - Weinberg equation is binomial expansion of– **$(p + q)^2$**
- Stabilising selection favours– **Intermediate forms of a trait**
- Change in frequency of alleles in population results in evolution as proposed by– **Hardy–Weinberg principle**
- Genetic drift operates only in– **Smaller population**
- Disturbance of Hardy - Weinberg equilibrium results in– **Evolution**
- Hardy - Weinberg equilibrium is known to be affected by gene - flow, genetic drift, mutation, genetic recombination and– **Natural selection**
- Random genetic drift in a population probably results from– **Interbreeding within small population**
- In random mating population in equilibrium, which of the following brings about a change in gene frequency in a non-directional manner– **Random drift**
- In England, weights of babies in a large sample were taken. This is an example for– **Stabilising selection**
- In a population in Hardy - Weinberg equilibrium, if the dominant allele frequency is 0.50, then the frequency of heterozygotes is– **0.50**

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- At a particular locus, frequency of allele A is 0.6 and that of allele is, 0.4, what would be the frequency of heterozygotes in a random mating population at equilibrium– **0.48**
- In a population of Hardy-Weinberg equilibrium, there are 64% of non-tasters of phenylthiocarbamide, which is a recessive trait. The percentage of homozygous tasters in that population– **4%**

6.8 Origin and Evolution of Man

- The most accepted line of descent in human evolution is– **Ramapithecus → Homo habilis → Homo erectus → Homo sapiens**
- If the Neanderthals are not the direct ancestors of humans, is it still possible for humans and Neanderthals to be related– **Yes, because we share a common ancestor**
- Man like primates were first found in– **East Africa**
- Australopithecus found in– **East African grassland**
- The first human-like being, is called – **Homo habilis**
- The brain capacity at Homo erectus was about– **900 cc**
- The extinct human ancestor, who ate only fruits and hunted with stone weapons, was– **Australopithecus**
- The cranial capacity was largest among the– **Neanderthal man**
- About 15 mya, primates were hairy and walked like gorillas and chimpanzees. They were– **Dryopithecus, Ramapithecus**
- The most apparent change during the evolutionary history of Homo sapiens is traced in– **Remarkable increase in brain capacities**
- Evolution of man was possible because our ape-like ancestors– **Showed bipedal movement on open land**
- …… drew excellent pictures of animals in caves, made tools, carved ornaments from ivory stone, arrows, etc.– **Cro-magnon man**
- Scientific name of Java man is– **Homo erectus erectus**
- The proper burial of dead for the first time started with which prehistoric man– **Neanderthal man**
- …… arose between 75,000–10,000 years ago, i.e., during ice age– **Homo sapiens**
- The least cranial capacity was that of– **Homo habilis**
- Homo sapiens arise in– **Africa**
- Cro-Magnon Man was– **Carnivorous**
- Modern man differs from apes in– **Arms shorter than legs**
- Direct ancestor of Homo sapiens is– **Homo erectus**
- The most primitive ancestor of man is– **Ramapithecus**
- Cave paintings by Pre-historic humans can be seen at Bhimbetka rock shelter in– **Madhya Pradesh**

6.9 Miscellaneous

- The young ones are protected inside the mother's body and are looked after they are born leading to more chances of survival is considered to be more evolved– **Viviparity**
- For the MN-blood group system, the frequencies of M and N alleles are 0.7 and 0.3, respectively. The expected frequency of MN-blood group bearing organisms is likely to be– **42%**
- ..... is used as an atmospheric pollution indicator– **Lichens**
- 'Golden Age of Dinosaures'/Age of reptiles– **Mesozoic Era**
- Fossil remains of Archaeopteryx indicates– **Reptiles gave rise to birds during Jurassic**
- The theory of spontaneous generation stated that– **Life can arise from non-living things only**
- Animal husbandry and plant breeding programmes are the examples of– **Artificial selection**
- Palaeontological evidences for evolution refer to the– **Fossils**
- The bones of forelimbs of whale, bat, cheetah and man are similar in structure, because– **They share a common ancestor**
- Analogous organs arise due to– **Convergent evolution**
- $(p + q)^2 = p^2 + 2pq + q^2 = 1$, represents an equation used in– **Population genetics**
- Appearance of antibiotic-resistant bacteria is an example of– **Pre-existing variation in the population**
- Evolution of life shows that life forms had a trend of moving from– **Water to land**
- Fossils are generally found in– **Sedimentary rocks**
- An example for link species– **Lobe fish**
- Natural selection where more individuals acquired specific character value other than the mean character value, leads to – **Directional change**
- The factor that leads to Founder effect in a population is– **Genetic drift**
- Flippers of Penguins and Dolphins are examples of– **Convergent evolution**
- Embryological support for evolution was disapproved by– **Karl Ernst von Baer**
- From his experiments, S.L. Miller produced amino acids by mixing the closed flask– **CH_4, H_2, NH_3 and water vapor at 800^0C**
- After about how many years of formation of earth, life appeared on this planet– **500 million years**
- Embryological support for evolution was proposed by– **Ernst Haeckel**
- A Hominid fossil discovered in Java in 1891, now extinct, having cranial capacity of about 900 cc was– **Homo erectus**
- According Hugo-de-vries, the mechanism of evolution is– **Saltation**

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EXAM POINT

The Origin of Life

The ratio of methane, ammonia and hydrogen in Stanley Millers experiment was– **2 : 1 : 2**	**MHT CET-6.10.2020-Shift-I / APEAMCET-2011, UP CPMT-2009 / Punjab MET-2009 / DUMET-2008**
The important gas which was absent during the formation of Earth is– **Oxygen**	**WB JEE-2012 / CMC Vellore-2012, CMC Ludhiana-2009 JCECE-2009, Manipal -2007 / UPCPMT -2006, Karnataka CET-2006 / BVP-2004, DUMET-2003 / AIPMT-1991**
The abiogenesis occured about how many billion years ago– **3.5 billion**	**Punjab MET-1999**
Theory of spontaneous generation was first refuted experimentally by– **Louis Pasteurand John Tyndall**	**AFMC-2000**
Life originated in– **Water**	**BCECE-2011 / VMMC-2002**
The famous book "Origin of Species" was written by Charles Darwin in– **1859**	**WB JEE -2011 / BVP-2010, Rajasthan PMT -2005 / AIPMT-1989**
Formation of similar structure in embryo represents– **Biogenetic law**	**UP CPMT-2010 / J&K CET 2005 / AIIMS -1998**
First conducted experiments on evolution to prove biochemical origin of life by– **Miller and Urey**	**DUMET-2008,05 / UP CPMT-2003**
Ontogeny repeats phylogeny is a part of– **Recapitulation theory**	**Punjab MET-2009 / J&K CET-2009, 2008, UP CPMT-2003, 2009 / DUMET-2005, 2002, 2001**
Embryo evolution theory gave by– **Ernst Haeckel**	**UP CPMT-2003**
Believers of spontaneous generation theory assumed that– **Organisms arise-from non-living material**	**Uttarakhand PMT-2007 / BVP-2014, 2008**
The category of molecules produced by the Miller-Urey experiment was– **Organic monomers**	**JCECE-2018 / Manipal-2011, CMC VELLORE-2011**
The results of Miller's experiments were discussed in the book "The Planets" written by– **Harold Urey**	**AFMC -2009**
The theory of pangenesis was rejected due to the acceptance of– **Weismann theory of germplasm**	**DUMET-2008**
In the origin of life, microspheres are most primitive protobiont, which have a membrane of– **Lipid and proteins**	**DUMET-2008**
The term hot dilute soup was used by– **Haldane**	**DUMET-2008**
Biological concept of species is mainly based on– **Reproductive isolation**	**UP CPMT-2012**
Urey-Millers experiment mixture had the except– **CO_2**	**J&K CET-2009**
Due to discovery of 1980s, the evolution was termed as RNA world due to the discovery of – **RNA enzymes**	**BHU PMT (Screening)-2010**

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Similarities in organisms with different genotypes indicates– **Convergent evolution**	**BHU PMT (Screening)-2010**
The unit of evolution is now known to be the– **Population**	**J&K CET-2012**
The concept of chemical evolution is based on– **Origin of life by combination of chemicals under suitable environmental conditions**	**Rajasthan PMT-2010 / AIIMS-2010**
The compound that has very important role in prebiotic evolution is– **CH_4**	**MGIMS Wardha-2008 / Rajasthan PMT - 2005, UPCPMT-2002 / AIIMS-1997**
Theory of pangenesis was given by– **Darwin (in 1868)**	**BHU PMT (Mains)-2010 / BCECE-2014, DUMET-2006 / BVP-2004,2001 / DUMET-2003**
Basic elements of life are– **C, H, O, N**	**AMU-1998**
Discovery of fossils of cyanobacteria indicates that life originated sometime– **More than 3600 million years ago**	**AMU-1998**
Origin of life occurred in– **Precambrian Era**	**Uttarakhand PMT-2009, BVP-2009**
Miller and Urey performed an experiment to prove the origin of life. They took gases NH_3, and H_2 alongwith– **H_2O and CH_4**	**AMU-2012 / JIPMER-2008, Rajasthan PMT-2006, 2003, Punjab MET-2006, 2003 /MGIMS Wardha - 2003, Manipal -2001 / UP CPMT-2001 /Haryana PMT- 2000**
First organisms to evolve on the earth were– **Chemoheterotrophs**	**CMC Vellore-2014 / BHU PMT (Screening)-2010, UP CPMT-2001 / AIPMT-2001, 1992**
In S. Miller's experiment was formed– **Amino acids**	**MHT CET -2016 / VMMC-2012, Uttarakhand PMT-2008 / CG PMT-2008, Rajasthan PMT-2008 / UP CPMT-2008, BVP-2007 / AIPMT-1999 / Rajasthan PMT-1999**
Origin of first mammals occurred in– **220 million years ago**	**Haryana PMT-2002**
Chemical theory of origin of life was given by– **Oparin and Haldane**	**JCECE-2018 / Kerala PMT-2012, JIPMER-2001 / CG-PMT-2006**
Pasteur's Swan necked flask experiment proved– **Biogenesis**	**TS EAMCET-2018 / AMU-2005, Karnataka CET -2001**
The long gap of 300 million years between the origin of earth and of life was due to lack of– **Suitable temperature, O_2**	**AMU-1997**
Whereas the earth is believed to be 4,500 million years old, life on this planet is estimated to have originated not earlier than– **3,500 million years ago**	**NEET -2020 Phase II / AMU-1997**
According to abiogenesis life originate from– **Non-living matter**	**J & K CET -2011 / DUMET-2009**

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The most primitive cell like chemical aggregates capable of growth and division were– **Microspheres**	**BVP-2012**
There is no life on moon due to the absence of– Water	**AIPMT-2002**
Earth originated approximately– **4.6 billion years ago**	**JIPMER -2015 / J&K CET-2004**
Experimental verification of chemical origin of life was successfully proved by– **Urey and Miller (in 1953)**	**TS EAMCET-02.05.2018 Shift-II, JIPMER-1996**
"Continuity of germplasm" theory was given by– **Weismann (in 1892)**	**Manipal -2014 / JIPMER -2012 /VMMC-2009, AMU-2007 / Haryana PMT -2003, APEAMCET -1998 / AIPMT -1989**
The origin of species from pre-existing species is– **Speciation**	**J&K CET-2002**
Fossil evidences of evolution are called– **Palaeontology**	**J&K CET-2002**
Spontaneous generation theory was given by– **Louis Pasteur (in 1859)**	**BVP-2005**
Big bang theory was proposed by– **Lemaitre**	**BVP-2001**
Panspermia, an idea that is still a favourite for some astronomers, means– **Transfer of spores as unit of life from other planets to Earth**	**NEET (Re-Exam)-04.09.2022**
The protein first hypothesis (in origin of life) is given by– **Sidney Fox**	**CMC Vellore-2013**
The mostly accepted theories on the origin of life is– **Chemical origin**	**Karnataka CET-2011**
The Coacervates were discovered by– **Oparin and Haldane**	**JIPMER-2019 / APEAMCET -2011, Punjab MET -2005 / Karnataka CET -2004**
Francisco Redi and Spallanzani disproved the theory of by their classical experiment– **Abiogenesis**	**MHT CET-2017**
Origin of life took place in/on– **Sea water**	**CG PMT-2005**
Theory of catastropism was supported by– **Cuvier**	**DUMET-2006**
In Miller's experiment, he used a mixture of CH_4, NH_3, H_2 and water vapour in a closed flask to mimic early earth conditions. What was the temperature at which this flask was kept– **800°C**	**AIIMS-2013**
…… these are considered most essential in the origin of life– **Nucleic acids**	**AIIMS-2001**
Theory of abiogenesis was conclusively disproved by– **Conducting swan neck experiment by Pasteur**	**AP EAMCET-25.09.2020 Shift-I**
Primitive earth had– **Reducing atmosphere (without free oxygen)**	**CMC Vellore-2012**
The term protobiogenesis used for theory of– **Biochemical origin of life**	**Manipal-2002**
Evolution is– **History and development of race along with variations**	**AIPMT-1989**
The presence of gill slits, in the embryos of all vertebrates, supports the theory of– **Recapitulation**	**AIPMT-1995**
Evolutionary history of an organism is known as– **Phylogeny**	**JCECE-2009 / AFMC-2008, AIPMT-2006 / CGPMT-2004**
Stanley Miller proposed origin of life by– **Chemical synthesis**	**Manipal-2005**
The material for organic evolution is– **Mutation**	**CG PMT-2004**

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Modern theory of organic evolution is based on– **Mutation, Isolation, Natural selection**	**CG PMT-2004**
For natural selection, the important factor is– **Variation**	**BVP-2011**
The most recent period in human evolution is– **Neolithic**	**BVP-2011**
To Cuvier, the differences in fossils from different strata were evidences for– **Local catastrophic events such as droughts or floods**	**Punjab MET-2005**
The oldest fossil record from India is of a blue-green alga which is 2.9 billion years old. It is– **Archaeo Spheroides**	**Punjab MET-2005**
The gases present that were in prebiotic atmosphere– **Ammonia, Methane**	**WB JEE-2015**
Total number of years are considered in one minute in Geological clock is– **3,125,000 years**	**GUJCET-2015**
The prebiotic atmosphere of the earth was of a reducing nature. It was transformed into an oxidizing atmosphere of present day due to the emergence of– **Cyanobacteria**	**Karnataka CET-2012**
Transformation of the early reducing atmosphere of the earth into an oxidizing atmosphere was mainly due to the activities of– **Aerobic photosynthesizers**	**Karnataka CET-2008**
Evidences for Evolution	
"Inheritance of acquired characters" suggested by Lamarck to be false, proved by– **August Weismann**	**TS EAMCET 10.05.2023 Shift-I**
The branch of botany which helps in understanding the course of evolution in plants is– **Paleobotany**	**AP EAMCET-11.07.2022 Shift-II, Karnataka CET -2013 / AFMC -2004**
The relatively most accurate method for dating of fossils is– **Electron-spin resonance method**	**Uttarakhand PMT -2010 / AIPMT-2005**
Prototherians are the connecting links between– **Reptiles and mammals**	**WB JEE-2006**
The pioneers in the field of organic evolution are– **Darwin, Hugo de Vries, Lamarck, Huxley**	**WB JEE-2006**
Foot prints, trails, tracks and tunnels of various organisms made in mud are rapidly filled in with sand and covered by sediments. This is an example of …… type of fossil– **Impressions**	**AMU-2015**
The vestigial organ of human is– **Wisdom teeth**	**DUMET-2006 / BVP -2005 / Haryana PMT - 2004 / Punjab MET-2003 / Manipal - 2003**
The earliest fossil form in phylogeny of horses is– **Eohippus**	**MGIMS Wardha-2007**
The wings of bat, locust and pigeon are the examples of– **Analogous organs**	**Manipal-2012 / AFMC -2002**
Birbal Sahni worked on– **Fossil plants**	**Manipal-2011**
Cosmozoic theory was proposed by– **Richter (1865)**	**Manipal-2004**
The theory of use and disuse of organ was proposed by– **Lamarck**	**J&K CET-2008**
S L Miller's closed flask contained– **CH_4, H_2, NH_3 and water vapour**	**J&K CET-2008**
The first fossil evidence of life dates from about– **3.7 billion years ago**	**DUMET-2010**
An important evidence in favour of organic evolution is the occurrence of– **Homologous and vestigial organs**	**DUMET-2008**

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The isotopes is used for finding the fossil having age more than 4500 year– **U^{238}**	**DUMET-2008**
Sweet potato and potato are examples of– **Analogous structure**	**DUMET-2008**
The characters that provides a strong evidence in support of organic ovulation is– **Gill clefts in vertebrate embryos**	**UP CPMT-2012**
As per geological time scale, hominids evolved during– **Pliocene**	**AFMC-2007**
Darwins finches provide excellent evidence in favour of organic evolution. These are related to the evidences is– **Biogeography (or geographic distribution)**	**Haryana PMT-2010 / AFMC-2007**
Half life period of C^{14} is– **5,730 years**	**BHU PMT (Screening)-2010 / BVP-2008**
Prehistoric forms of life are found in fossils. The probability of finding fossils of more complex organisms– **Increases from lower to upper strata**	**KVPY SA-2012**
Industrial melanism as observed in peppered moth proves that– **The true black melanic form arise by a recurring random mutation**	**Rajasthan PMT-2010**
The set that includes only analogous organs is– **Wings of butterfly and Sparrow and bat**	**UP CPMT - 2005 / JIPMER-2006, MGIMS Wardha-2005**
Myrmecobius and Myrmecophaga are closely related and have similar adaptations for the same habitat. This phenomenon is– **Parallel evolution**	**BCECE-2010**
An evolutionary pattern characterized by a rapid increase in the number and kinds of closely related species is called– **Adaptive radiation**	**AMU-2010, 2012**
Most fossils have been found in– **Sedimentary rocks**	**AMU-1999**
The most provided evident proof of evolution is– **Fossils**	**JIPMER - 2009 / UP CPMT-2012, 2008, VMMC-2012 / DUMET -2004**
The oldest living fossil is– **Neopilina**	**AFMC-2010 / CG PMT-2007**
Homologous organs are– **Paddle of Whale, front legs of horse and arms of humans**	**Haryana PMT-2002 / JIPMER 1996 / AIPMT-1999**
A pair of analogous organs is– **Contractile vacuole in Amoeba and uriniferous tubules in frog**	**BVP -2005 / Haryana PMT-2004 / Manipal-2003**
The living fossil are– **Latimeria, Cycas, Coelacanth, Limulus, Sphenodon**	**AMU-2008V / MMC-2008**
The phenomena supports Darwin's concept of natural selection in organic evolution is– **Prevalence of pesticide resistant insects**	**CG PMT-2006**
Lamarck was– **French scientist (inheritance of acquired characters)**	**DUMET-2002,2001**
Phrase Survival of the Fittest was used by– **Herbert Spencer**	**APEAMCET -2018 / Haryana PMT-2003**
Vestigial organs present in an adult individual are examples of basis of evidences of evolution– **Anatomical**	**J&K CET-2007**
Peripatus is a connecting link of– **Annelida and Arthropoda**	**CG PMT-2010**
Lungs of rabbit and gills of rohu are example of– **Homologous organ**	**BVP-2013**
Beak is toothed in– **Archaeopteryx**	**BVP-2012**
Homologous organs indicate the– **Common descendants**	**Rajasthan PMT-2011**

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Eusthenopteron connects– **Fishes and amphibians**	**AP EAMCET-1999**
The type of fossil where hard parts like bone or trunks of trees are preserved are known as– **Petrifiction**	**AMU-1996**
Regeneration of a limb is the example of– **Epimorphosis**	**CMC Ludhiana -2013**
The banding pattern of chromosomes 3 and 6 of human beings and chimpanzee shows that they had– **Common origin**	**BCECE-2003**
Resemblance between widely different groups due to a common adaptation is known as– **Convergent evolution**	**Manipal-2006**
Sudden appearance of an ancestral character is known as– **Atavism**	**JCECE -2014 / Manipal-2006**
Plants of the Galapagos Islands resembles most closely to the plants of– **South America**	**Manipal-2006, 2014**
According to fossils which discovered up to present time, origin and evolution of man was started from (country)– **Africa**	**AIPMT-2002**
Cretaceous, Jurassic and Triassic periods are included in – **Mesozoic era**	**MHT CET-04.10.2020 Shift-I**
Industrial melanism was highlighted by– **Biston betularia (Moth)**	**Kerala PMT-2008**
Which was having lowest brain capacity during human evolution– **Homo habillis**	**GUJCET-2020**
Wings of pigeon, mosquito and bat shows– **Convergent evolution**	**AIIMS-1999**
The terms that represents a pair of contrasting character is– **Allelomorphs**	**AIIMS-1994**
Homologous organs are– **Similar in origin and different in functions**	**HP CET-2018**
Human ancestors who left cave paintings were– **Cro-magnon man**	**JIPMER-2010**
Embryological support for evolution was disapproved by– **Karl Ernst von Baer**	**NEET-2020 Phase-I / AIPMT - 1990**
According to Darwinism the term fitness is– **Ability to survive and reproduce**	**SRM JEE -2017**
Phenetic classification is based on– **Observable characteristics of existing organisms**	**AIPMT-2003**
The sequences that was proposed by Darwin and Wallace for organic evolution are– **Overproduction, constancy of population size, variations, natural selection**	**AIPMT-2003**
In turnip, 2/3 part of swollen area is derived from– **Hypocotyl**	**JIPMER-2006**
Seymouria is a connecting link between– **Amphibians and Reptiles**	**MHT CET-2017**
Vestigial organs are those organs which are– **not of much use today**	**CG PMT-2005**
Philosophic zoologique written by– **Lamarck**	**DUMET-2006**
Coverstone of theory of Darwin was– **Natural selection**	**DUMET-2005**
Tendrils in plants are an example of– **Divergent evolution**	**DUMET-2011**
Darwins judged the fitness of an individual by– **Number of offsprings**	**DUMET-2011**
The postulates that is related with Neo-Darwinism is– **Mutations are believed to help form new species, It incorporates isolation as an essential component of evolution**	**AIIMS-2009**
Genetic drift operates only in– **Smaller population**	**AIIMS-2001**

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Who explained the evolution in most acceptable form– **Lamarck, Darwin, Hugo de Vries**	**AIIMS-27.05.2018 Shift-I**
Descent with modification is the main theme of– **Evolution**	**Punjab MET-2007**
Parallelism is– **Adaptive convergence of closely related groups**	**AIPMT-1990**
The isotopes that is most dangerous to Homo sapiens is– **Strontium-90**	**AIPMT-1996**
The change of the lighter-coloured variety of peppered moth (Biston betularia) to its darker variety (Biston carbonaria) is due to– **Mutation**	**AIPMT-1996**
Evolutionary convergence is characterised by– **Development of a common set of characteristics in groups of different ancestry**	**WB JEE-2006, AIPMT-1997**
The mammals (animals) from colder climate generally have shorter hair and not fully developed ear, eyes and other phenotypic characters. This known as– **Allen's rule**	**J&K CET-2013**
Paleontological evidence for evolution is– **Archaeopteryx**	**Punjab MET-2011**
Change in the number of body parts is called– **Meristic variation**	**VMMC-2009**
Neoteny refers to– **Retention of larval or embryonic trait in the adult body**	**WBJEE-2015, CMC Vellore-2008**
The animal used to explain industrial melanism is– **Peppered moth**	**Karnataka CET-2000**
Fossilized faecal material of animals are known as– **Coprolites**	**J&K CET-2011**
The original features of Darwin's finches in Galapagos islands were adapted for– **Seed eating characteristics**	**Kerala PMT-2013**
The diversity in the type of beaks of finches adapted to different feeding habits on the Galapagos Islands, as observed by Darwin, provides evidence for– **Origin of species by natural selection**	**Punjab MET-2010**
Analogous structures are a result of– **Convergent evolution**	**NEET-2016 Phase-I**
In the case of peppered moth (*Biston betularia*) the black-coloured from became dominant over the light-coloured form in England during industrial revolution. This is an example of– **Natural selection whereby the darker forms were selected**	**AIPMT-2009**
In Bougainvillea and Cucurbita, the axillary bud is modified into thorn and tendril respectively. This is an example of– **Divergent Evolution**	**Karnataka CET-2019**
The evidence of evolution related to Darwin's finches is– **Evidences from biogeographical distribution**	**AIPMT-2000**
Dinosaurs dominated the world in geological era is– **Jurassic Period of Mesozoic Era**	**NEET (Karnataka)-2013**
The theory that environment can bring about changes in individuals was proposed by– **Lamarck**	**AP EAMCET-2011**
Development of Pentadactylous nature in vertebrates is example of– **Divergent and adaptative radiation**	**UP CPMT-2006**
Thorns of Bougainvillea and tendrils of Cucurbita are example for– **Divergent evolution**	**AIPMT - 2008, Karnataka CET-2014**
Among the human ancestors the brain size was more than 1000 CC in– **Homo neanderthalensis**	**AIPMT-2007**
The common to whale, that seal and shark is– **Convergent evolution**	**AIPMT-2007**
According to de Vries theory, evolution is– **Discontinuous, Jerky**	**UP CPMT-2011**

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Adaptive Radiation	
Wings of birds (Sparrow) and Pectoral fins of fish are - **Homologous organs**	**AIPMT-2002**
Convergent evolution is illustrated by– **Dog fish and whale**	**AP EAMCET-24.09.2020 Shift-I**
Australian Marsupials exhibiting adaptive radiation are– **Numbat, Spotted cuscus, Flying phalanger**	**NEET (UG) 07.05.2023**
Analogous organs have– **Different origin but similar functions**	**CMC Vellore-2014 / VMMC-2011**
Darwin's finches refers to– **A type of birds present of Galapagos islands**	**Punjab MET-2009 / Rajasthan PMT-2009**
The classical example of adaptive radiation in development of new species is– **Darwin finches, Marsupials of Australia, Giant turtle**	**UP CPMT-2004**
The burrowing marsupial is– **Notoryctus**	**Punjab MET-1999 / AP EAMCET-1997**
The adaptive similarities in different animals, found in the same habitat, is called– **Convergent evolution**	**Punjab MET-1999**
An evolutionary process, giving rise to new species adapting to new habitats and ways of life is called– **Adaptive radiation**	**DUMET-2008**
Darwin's finches provide an excellent evidence in favor of organic evolution. These are related to evidences of evolution – **Biogeographical or geographic distribution**	**Manipal-2012, 2000 / AMU-2007 / WB JEE-2006**
An example of Adaptive radiation in selection is– **Diversifying selection**	**Uttarakhand PMT-2010 / AP EAMCET-2003**
Darwin′s theory of natural selection fails to explain– **Arrival of the fittest**	**AP EAMCET-2001**
Finches of Galapagos islands differ from main land finches in size, colour and food habits. It is due to– **Geographical isolation**	**MHT CET-07.10.2020 Shift-I**
The homologous organs are– **Whales flipper, horses forelimb, human hand**	**BCECE-2008**
The mode of speciation mediated by geographical isolation is referred to as– **Allopatric speciation**	**KVPY SA-2019**
Natural selection where more individuals acquire specific character value other than the mean character value, leads to– **Directional change**	**NEET-2022**
Flippers of Penguins and Dolphins are examples of– **Convergent evolution**	**NEET-2020 Phase-I**
Forelimbs of cat, lizard used in walking ; forelimbs of whale used in swimming and forelimbs of bats used in flying are an example of– **Homologous organs**	**AIPMT-2014**
Analogous structures are– **Gills of prawn and lungs of man**	**AIPMT-2014**
In Australia, marsupials and placental mammals have evolved to share many similar characteristics. This type of evolution may be referred to as– **Convergent Evolution**	**NEET (Odisha)-2019**
A population of a species invades a new area. The condition that will lead to Adaptive Radiation is– **Area with many types of vacant habitats**	**NEET (Odisha)-2019**
The similarity of bone structure in the forelimbs of many vertebrates is an example of– **Homology**	**NEET-2018**
The process by which organisms with different evolutionary history evolve similar phenotypic adaptation in response to a common environmental challenge, is called– **Convergent evolution**	**NEET-2013**

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The eye of octopus and eye of cat show different patterns of structure, yet they perform similar function. This is an example of Analogous organs that have evolved due to – **convergent evolution**	**NEET-2013**
Praying mantis is a good example of– **Camouflage by mimicry**	**AIPMT-2006**
More than 70% of world's fresh water is contained in– **Polar ice**	**AIPMT-2005**
As an example of adaptive radiation, Darwin observed a variety of finches in– **Galapagos Islands**	**MHT CET-2018**
The animals that shows discontinuous distribution is– **Lung fishes**	**DUMET-2011**
Reproductive isolation in sympatric speciation develops without– **Geographical barrier**	**AIIMS-2017**
Darwin's finches are a good example of– **Adaptive radiation**	**JIPMER-2012 / AIPMT (Screening)-2010, AIPMT-2008**
Evolution of different species in a given area starting from a point and spreading to other geographical areas is known as– **Adaptive radiation**	**NEET-2020 Phase-II / AIPMT (Screening)-2012**
The peculiar primitive animals found in Madagascar but absent in Africa are– **Lemurs**	**AP EAMCET-2008**
One of the important consequences of geographical isolation is– **Speciation through reproductive isolation**	**AIPMT-2007**
The finches of Galapagos islands provide an evidence in favor of– **Biogeographical Evolution**	**AIPMT-2007**
Hardy Weinberg Principle	
In a population, Hardy Weinberg equilibrium is disturbed by factors EXCEPT– **Gene flow**	**MHT CET-2019**
The chance of elimination of genes from a small population is an example of– **Genetic drift**	**UP CPMT-2004**
Genetic drift is the elimination of– **Gene of some original characteristic of a species due to epidemics**	**BVP-2010**
Change in frequency of alleles in a population results in evolution is proposed in– **Hardy-Weinberg principle**	**J&K CET-2008**
A change in the relative abundance of an allele (the allelic frequency) within a population, over a succession of generations is called– **Micro evolution**	**HP CET-2011**
The mechanism of evolution affects that the genetic makeup of a population is– **Genetic drift**	**J&K CET-2014**
Group of genes present in an ecosystem is called as– **Gene pool**	**Rajasthan PMT-1998**
The concept of genetic drift was introduced by– **Sewall Wright**	**Punjab MET-2011, Karnataka CET-2003**
Darwinian fitness is lowered from minimum to zero, to check the undue accumulation of deleterious mutations by– **Normalizing selection**	**AP EAMCET-2002**
For natural selection, the important factor is– **Variation**	**CG PMT-2011**
Random genetic drift in a population leads to– **Increased inbreeding within a population**	**JCECE-2015 / AIPMT-2003**
In Hardy-Weinberg equation, the frequency of heterozygous individual is represented by– **2pq**	**NEET-2016 Phase-II**
A population will not exist in Hardy - Weinberg equilibrium if– **Individuals mate selectively**	**AIPMT-2015**

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Artificial selection to obtain cows yielding higher milk output represents– **Directional as it pushes the mean of the character in one direction**	**NEET-2017**
In which condition, the gene ratio remains constant for any species– **Random mating**	**AIPMT-2002**
Hardy Weinberg equilibrium is affected by– **Natural selection, New mutation, Genetic drift**	**AIIMS-25.05.2019 Shift-I**
The natural selection that acts against change in the form and keeps the population constant through the time is– **Stabilizing**	**Manipal-2010 / AP EAMCET-2006**
Transfer of genetic material between populations is best defined as– **Gene flow**	**KVPY (SA)-05.11.2017**
Brief Account of Evolution	
If speciation takes place due to geographical isolation, it is called– **Allopatric speciation**	**AP EAPCET-10.05.2023, Shift-II**
Darwin proposed the theory of– **Natural selection**	**BCECE-2005 / Rajasthan PMT-2009, Punjab MET-2009**
The struggle for existence and survival of the fittest theories was given by– **Darwin**	**JCECE-2008**
First mammal occur in …….. –– **Triassic period -Mesozoic era**	**JCECE-2008**
Phenomenon of industrial melanism demonstrates– **Natural selection**	**Rajasthan PMT-2004**
Dinosaurs become extinct in– **Cretaceous period**	**Punjab MET-2003**
Dominant era of amphibians is– **Carboniferous**	**UP CPMT-2010**
Triassic and Jurassic Periods belong to Era– **Mesozoic**	**Tripura JEE-2018**
The golden age of reptiles is– **Mesozoic era**	**CMC Ludhiana-2015 / J&K CET-2008, AIIMS-1994 / BVP-2002 / UP CPMT-2003**
The method of classification, called cladistics, is based on– **Evolutionary history**	**Uttarakhand PMT-2004**
The gymnosperms formed the dominant vegetation on the earth during the geological period called– **Triassic Period**	**AMU-1999**
Abiogenetic theory of origin states– **Spontaneous generation**	**Manipal-2000**
The phenomenon ontogeny repeats phylogeny is explained by– **Inheritance theory**	**Manipal-2000**
Mammals are believed to have evolved from reptiles in– **Triassic**	**CG PMT-2011 / Haryana PMT-2002 / AMU-1997**
The periods that is largely associated with extinction of dinosaurs and increase in the plants and reptiles is– **Cretaceous**	**JCECE-2018 / DUMET-2009**
Dinosaurs were most abundant in– **Jurassic**	**SRM JEEE-2019 / J&K CET-2004, Haryana PMT-2003**
The dominant animal during Mesozoic era is– **Reptiles (Plesiosaurus)**	**AP EAMCET-1997 / Manipal-2002**
According to the Neo-Darwinian theory that is responsible for the origin of new species– **Mutations together with natural selection**	**AFMC-2006**
Survival of the fittest is the basic principle of a competition. Its importance in organic evolution was explained by– **Charles Darwin**	**J&K CET-2007**

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The earliest fossil form in phylogeny of horse is– **Eohippus**	**BVP-2012**
Two or more species occupying same or over lapping areas are– **Sympatric**	**BVP-2012**
The fossil record of placoderms is found in era– **Palaeozoic**	**AP EAMCET-2000**
The presence of gill slits in the embryos of all vertebrates supports the theory of– **Recapitulation**	**CMC Vellore-2014**
The first organisms appears on earth were– **Chemoheterotrophs**	**CMC Vellore-2014**
Cenozoic era refers to the age of– **Birds and mammals**	**AP EAMCET-1999**
The devonian period is considered to be as– **Age of fishes**	**AMU-1996**
For evolution the most important requirement is– **Variation**	**AMU-2003**
Diversification in plant life appeared– **Due to long periods of evolutionary changes**	**AIPMT-2004**
The factor that leads to founder effect in a population is– **Genetic drift**	**NEET-2021**
Variation in gene frequencies within population can occur by chance rather than by natural selection. This is referred to as– **Genetic drift**	**NEET-2013**
According to Darwin, the organic evolution is due to– **Interspecific competition between species**	**NEET-2013**
Jurassic period of the Mesozoic era is characterized by– **Gymnosperms are dominant plants and first birds appear**	**AIPMT-2006**
The animals that developed the ability of using ribs and intercostals muscle in ventilation for the first time in vertebrate evolution is– **Reptiles**	**AP EAMCET-11.07.2022 Shift-II**
During the geological period of evolution that did the greatest diversification of life occurred on the earth is– **Cambrian Period**	**JIPMER-2015**
Mammals evolved from therapsids reptiles in Triassic period. The type of skull in these reptiles is– **Synapsid skull**	**AP EAMCET-2007**
A group of plants representing one or more ecospecies of common evolutionary origin is– **Cenospecies**	**SRM JEEE-2018**
Cuscuta is an example of– **Ectoparasitism**	**AIPMT (Mains)-2012**
Collagen is– **Fibrous protein**	**AIPMT-2002**

Origin and Evolution of MAN

According to fossils discovered up to present time, the origin and evolution of man started from which country– **Africa**	**AIPMT-2002**
The most recent and direct prehistoric ancestor of present man is– **Cro-magnon**	**Punjab MET-2009 / Rajasthan PMT-2009, UP CPMT-2009**
Modern man is evolved– **Between 75000-10000 year ago**	**Uttarakhand PMT-2004**
The early man whose skeleton is almost indistinguishable from that of modern man – **Cro-magnon man**	**HP CET-2011**
Homo erectus evolved during– **Pleistocene**	**WB JEE-2012 / AIIMS-2009**
Ancestors of man, who first time showed bipedal movement in - **Australopithecus**	**WB JEE-2009**
Each embryo's developing stage represent an adult form of an evolutionary ancestor recapitulation theory states that– **Haeckel's biogenetic law**	**BVP-2012 / MGIMS Wardha-2007**
Modern man differs from apes in– **Arms shorter than legs**	**Manipal-2011**
Agriculture was originated in Mesolithic age about– **7000-15000 years ago**	**BHU PMT-2001**
The brain capacity of *Homo erectus* is– **900 cc**	**Kerala CPMT-2011 / J&K CET-2008 / BVP-2002**

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Name given to fossil hominid of Shivalik hills in India is– **Ramapithecus**	**HP CET-2011 / Manipal-2010, AMU-2009, 2004 / VMMC-2005, Uttarakhand PMT-2004**
The chronological order of human evolution from early to the recent is– **Ramapithecus-Australopithecus-Homo habilis -Homo erectus**	**J&K CET-2009**
The first human-like being was– **Homo habilis**	**Karnataka CET-2022 / Kerala PMT-2015, AP EAMCET-2015**
Among the human ancestors, the brain size was more than 1000 cc in– **Homo neanderthalensis**	**Rajasthan PMT-2010**
The cranial capacity of Peking man was about– **1075 cc**	**MGIMS Wardha-2008**
Highest cranial capacity is present in– **Cro - magnon man (around 1660 cc)**	**AMU-2011, 2005, 2004 / UP CPMT-2006, VMMC-2005 / Haryana PMT-2004**
The biological name of the Java man is– **Homo erectus, Pithecanthropus erectus**	**CG PMT-2007 / Haryana PMT-2002**
In human evolution, the most recent is– **Neolithic**	**VMMC-2008 / AMU-2008 / CG PMT-2007**
Bipedal locomotion is advantageous because It– **Releases forlimbs for other purposes**	**Haryana PMT-2002**
Prehistoric man was– **Food gatherer**	**Haryana PMT-2002**
The fossils of this man provide first evidence for the burial of their dead is– **Neanderthal man**	**JCECE-2018, UP CPMT-2002**
Dubois in 1891 found the fossil of Java ape man. It is– **Pithecanthropus erectus**	**JIPMER-2000, MHT CET-2017**
"Lucy" is the fossil of– **Australopithecus**	**AP EAMCET-25.09.2020 Shift-II**
A Hominid fossil discovered in Java in 1891, now extinct, having cranial capacity of about 900 cc was– **Homo erectus**	**NEET-2020 Phase-II**
"*Homo sapiens*" implies – **Modern man**	**AIIMS-2007**
The extinct human ancestor, who eat only fruits and hunted with stone weapons was– **Australopithecus**	**AIIMS-2012**
The cranial capacity was largest among the– **Neanderthal man**	**AIIMS-2002**
The changes for man in the course of evolution that is probably useless– **Loss of tail**	**AIPMT-1996**
The direct ancestor of Homo sapiens– **Homo erectus**	**AIPMT-1996**
The brain capacity of *Homo habilis* is– **Between 650 cc–800 cc**	**Karnataka CET-2019**
Homo sapiens have evolved in– **Pleistocene**	**AIPMT-2000**
The most significant trend in the evolution of modern man (*Homo sapiens*) from his ancestors was– **Increasing cranial capacity**	**AIPMT (Screening)-2012**
The Mediterranean type of popular fowls are called– **White leghorn**	**AP EAMCET-2003**
A baby has been born with a small tail. It is the case exhibiting– **Atavism**	**Haryana PMT-2004**
Feature and shared characters depicting evolution in the form of a diagram- **Cladogram represents**	**BHU PMT (Screening)-2011**

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Mass extinction at the end of Mesozoic era was probably due to– **The collision of earth with large meteorites**	**DUMET-2009**
The period that is dubbed as the age of prokaryotic microbes– **Proterozoic Era**	**AIPMT-1995**
Origin of life occurred in– **Precambrian Era**	**JIPMER-2012**
The most significant trend in the evolution of modern man (*Homo sapiens*) from his ancestors is– **Increasing brain capacity**	**AIPMT (Screening)-2011**
Common link between apes and man was– **Dryopithecus**	**AP EAMCET-2011**
The fossils of java man was obtained from– **Java**	**AP EAMCET-2011**
The human ancestors is known as tool maker that is– **Homo habilis**	**JIPMER-2016**
The most recent and direct pre-historic ancestor is– **Cro-magnon**	**JIPMER-2014**
The cranial capacity of modern man is– **1200-1600 cc^3**	**UP CPMT-2011**
Biological Evolution	
The method of representing phylogeny by branching diagram was introduced by– **Ernst Haeckel**	**AP EAPCET-23.05.2023, Shift-I**
Coverstone of theory of Darwin was– **Natural selection**	**UP CPMT-2003,2009 / J&K CET-2006**
Some bacteria able to grow in streptomycin containing medium due to– **Natural selection**	**AIPMT-2002**
From his experiments, S.L. Miller produced amino acids by mixing the following in a closed flask– **CH_4, H_2, NH_3 and water vapor at 800°C**	**NEET-2020 Phase-I**
The chronological order of human evolution from early to the recent is– **Ramapithecus→Australopithecus→Homo habilis→Homo erectus**	**NEET-2016 Phase-II**
Alexander Von Humboldt described for the first time– **Species area relationships**	**NEET-2017**
Weismann cut off tails of mice generation after generation but tails neither disappeared nor shortened showing that– **Lamarckism was wrong**	**SRM JEEE -2017 / AIPMT-1993**
De Vries gave his mutation theory on organic evolution while working on – **Oenothera lamarckiana**	**AIPMT-2005**
The phenomena that supports Darwin's concept of natural selection in organic evolution is– **Prevalence of pesticide resistant insects**	**AIPMT-2005**
Descent of man and selection in relation to sex was written by– **Darwin**	**AP EAMCET-24.09.2020 Shift-I**
Lederberg's replica experiment explains– **Darwin's theory**	**AP EAMCET-2011**
Darwin's book "Origin of New Species by Natural Selection" was published in– **1859**	**UP CPMT-2002**
According to Darwin, evolution is– **A slow, gradual and continuous process**	**Karnataka CET-2010**
The best description of natural selection is– **The reproductive success of the members of a population best adapted to environment**	**JIPMER-2016**
Higher frequency of melanic British moths and DDT resistance in mosquitoes are cited as examples for– **Natural selection**	**Karnataka CET-2008**
Variations are inherited from parents to offspring through genes- **Darwinism explains**	**JIPMER-2014 / Karnataka CET-2009**
Darwins finches represent– **Geographical isolations**	**JIPMER-2014**
McDougall experiment with rats supported– **Neo-Lamarckism**	**SRM JEEE-2018**
Jean-Baptiste Lamarck explained evolution based on– **Inheritance of acquired characteristics**	**KVPY (SA)-05.11.2017**

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07.

HUMAN HEALTH AND DISEASE

7.1 Common Diseases in Humans

- Ringworm is the causal organism– **Many fungi belong to the genera microsprorum, Trichophyton and Epidermophyton**
- Infection of Ascaris usually occurs by– **Drinking water containing eggs of Ascaris**
- Disease which is always present at a low level in a given population or a region is termed as– **Endemic**
- Common cold is not cured by antibiotics because it is– **Caused by a virus**
- The term 'Health' is defined in many ways. The most accurate definition of the health would be health is a state of complete– **Physical, mental and social well-being**
- The sporozoites that cause infection, when a female Anopheles mosquito bites a person, are formed in– **Intestine of mosquito**
- Many diseases can be diagnosed by observing the symptoms in the patient. Which group of symptoms are indicative of pneumonia– **Difficulty in respiration, fever, chills, cough, headache**
- Typhoid fever in human beings is caused by– **Salmonella typhi**
- Bacterial diseases includes– **Typhoid, Pneumonia, Plague**
- A person suffering from a disease caused by Plasmodium, experiences recurring chills and fever at the time when the parasite after its rapid multiplication inside releasing the haemozoin– **RBCs ruptures**
- The common cold is caused by– **Rhinoviruses**
- .....Pneumonia pathogen infects alveoli whereas common cold affects nose and respiratory passage but not the lungs– **Common cold differs from Pneumonia**
- Elephantiasis is transmitted through– **Bite by female mosquito vector**
- A toxic substance, responsible for the chills and high fever recurring every three to four days in malarial fever, is– **Haemozoin**
- During the life cycle of Plasmodium, sexual reproduction takes place in the hosts is– **Female Anopheles mosquito**
- Where will you look for the sporozoites of malarial parasite– **Saliva of infected female Anopheles mosquito**
- An intestinal parasite which causes blockage of the intestinal passage and whose eggs are excreted along with the faces of infected person is --------- **Ascaris**
- Wuchereria bancrofti is affected by the infection of– **Lymphatic vessels**
- The diseases transmitted by the bite of the female mosquito vector is– **Filariasis**
- The pathogen Microsporum responsible for ringworm disease in humans belongs to the same kingdom as that of– **Rhizopus, a mould**
- Appearance of dry, scaly lesions with itching on various parts of the body are the symptoms of– **Ringworm**
- Gambusia is a fish which is being introduced into the ponds in order to check the vector borne diseases such as– **Dengue, Malaria, Chikungunya**
- Salmonella typhi is a bacteria and causes typhoid, this pathogen causes lesions and ulcer in the– **Intestinal wall**
- The lymphoid organ provides the site for the interaction of lymphocytes with the antigen– **Spleen**
- Bacteria like streptococcus and Haemophilus influenzae are responsible for– **Pneumonia**
- The bacterial disease– **Diphtheria, leprosy, plague**
- In DPT vaccine 'T' stands for– **Tetanus**
- An autoimmune disease is– **Myasthenia gravis**
- Dengue fever is caused by– **Virus**
- A metastatic cancerous tumour is termed sarcoma, if the disorder in– **Fibroblasts**
- Diseases is viral as well as transmitted by mosquitoes– **Yellow fever and dengue**
- Sporozoites of the malarial parasites are found in saliva of infected – **Female Anopheles Mosquito.**
- An autoimmune disease– **Rheumatoid arthritis**
- The sexual cycle of Plasmodium is completed in– **The gut of mosquito**
- Typhoid bacteria enters first in– **Small intestine**
- Pneumonia is caused by– **Haemophilus influenzae**
- Disease confirmed by widal test– **Typhoid**
- The toxic substance haemozoin, related to high fever and chill is– **Malaria**

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- The site Wuchereria is normally found on human body– **Lymphatic vessels of the lower limbs**
- Food poisoning caused by– **Escherichia coli**
- The set includes bacterial disease– **Tetanus, typhoid, tuberculosis**
- A communicable or contagious disease is– **Malaria**
- Disease, transmitted through contaminated water and food– **Typhoid**
- Dysentery, plague, diphtheria are– **Bacterial diseases**
- Malaria is a– **Protozoan disease**
- The most fatal Plasmodium is– **P. falciparum**
- Haemozoin released as a result of– **Rupture of RBC**
- Fertilization and development of malarial parasite takes place in– **Gut of mosquito**
- Amoebic dysentery is caused by– **Entamoeba histolytica**
- That form of malarial parasite reach the liver through blood– **Sporozoite**
- Filariasis is caused by– **Wuchereria**
- Intestinal bleeding, muscular pain, fever, anaemia are the common symptoms of– **Ascariasis**
- The pairs contains an infectious and a non-infectious disease respectively– **AIDS & cancer**
- The disease is caused by the bite of the female mosquito vector– **Filariasis**
- Do you see sporozoites of malarial parasite– **Saliva of infected female Anopheles mosquito**
- The pairs of disease is viral as well as transmitted by mosquitoes– **Chikungunya and dengue**
- Influenza is caused by – **Virus**
- The insectivorous fish used for mosquito control– **Gambusia**
- Malarial parasite can be obtained in RBCs of patient– **When temperature rises with rigor**
- Appearance of dry, scaly lesions on various parts of the body such as skin, nails and scalp are the main symptoms of a fungal disease caused by– **Epidermophyton**
- The alveoli (air filled sacs) of the lungs are infected in– **Pneumonia**
- Infectious stage of Plasmodium is– **Sporozoite**
- Dengue is caused by– **Female Aedes**
- Infection of Ascaris usually occurs by– **Contaminated water and vegetables**
- Ringworms are generally acquired from– **Soil, Clothes, Comb**
- The term 'health' is defined in many ways. The most accurate definition of health would be– **Health is a state of complete physical mental and social well being**
- Malarial parasite is best obtained from a patient– **While temperature is rising sharply**

7.2 Immunity

- Colostrum, the yellowish fluid, secreted by mother during the initial days of lactation is very essential to impart immunity to the new born infants because it contans– **Immunoglobulin A**
- Humoral immunity is mediated by– **Antibody formation by B-lymphocytes**
- Primary and secondary immune response are carried out with the help of two special types of ____ present in our blood– **Lymphocytes**
- Diseases, easily transmitted from one person to another– **Communicable disease**
- The class of immunoglobulins (Igs) which is mediator of allergic response is– **IgE**
- A protein or polysaccharide molecule that stimulates antibody formation is– **Antigen**
- Passive immunity can be conferred directly by– **Antitoxins, Colostrum**
- The form of pathogen is used in vaccination– **Inactivated and weakened pathogenic antigens**
- Injection of antitoxin in tetanus confers which type of immunisation– **Passive immunisation**
- The term 'antitoxin' refers to a preparation containing– **Antibodies to the toxin**
- The injection given against the snake venom contains– **Antigenic proteins, Preformed antibodies, Attenuated pathogen**
- The site where lymphocytes interact with antigens and proliferate to become effector cells are spleen and lymph nodes and– **Peyer's patches of small intestine and tonsils**
- Use of vaccination and immunisation programmes have controlled infectious diseases– **Polio and small pox, Diphtheria and pneumonia**
- An auto-immune disease is– **rheumatoid arthritis, Myasthenia gravis**
- The drugs used to quickly reduce the symptoms of allergy are– **Anti-histamine and adrenaline and steroids**
- The primary lymphoid organs are– **Bone marrow and thymus**
- Humoral immunity is associated with– **B-cells**
- The principle of vaccination and immunisation is based on– **Memory cells**

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- Ability of the host to fight the disease causing organisms refers to the term– **Immunity**
- Mucosa Associated Lymphoid Tissue (MALT) is– **Constitutes about in human body 50%**
- The lymphoid tissue, located within the lining of digestive tract is– **MALT**
- A person has developed interferons in his body. He seems to carry an infection of– **Common cold**
- Primary response produced due to first time encounter with a pathogen is of– **Low intensity**
- The components that does not participate in innate immunity– **B-Lymphocytes**
- Antibodies are secreted by– **B-Lymphocytes**
- Two light peptide chains and two heavy peptide chains consists of– **Antibody**
- They can enter our body by various means multiply and interfere with normal vital activities resulting in morphological and functional damage– **Pathogen**
- Cells are involved in allergic response– **Basophils and Mast cells**
- A quick immune response is required due to infection of a deadly microbe, the patient is injected with– **Preformed antibodies**
- The principle of vaccination is based upon the– **Memory of immune system**
- The foetus gets immunized after receiving antibodies from mother through placenta, called– **Passive immunity**
- The exaggerated response of the immune system to certain antigens– **Allergy**
- The antibodies produced during allergy– **IgE type**
- Primarily concerned with protection against germs– **Lymphatic tissue**
- Active immunity means– **Resistance developed after disease**
- Antibody formation and immunity production is done by a protein called globulin present in– **Plasma**
- A person is injected with globulin against hepatitis, this is– **Artificially acquired passive immunity**
- The use of antihistamine, adrenalin and steroids quickly reduce the symptoms of– **Allergy**
- Cyclosporin is used as– **Immunosuppresive agent**
- Acts as a physical barrier to the entry of micro organisms in human body– **Skin**
- Immunoglobulins are– **Antibodies**
- Antigens are present– **Surface on RBC**
- The serum of other animals enriched in antibodies achieved through- **Passive immunity**
- Short-lived immunity acquired from mother by foetus across placenta or through mother's milk to the infant, is categorized as– **Passive immunity**
- PMNL is– **Polymorpho - nuclear leukocytes**
- An antiviral substance known to prevent the synthesis of new virus in the cells is known as– **Interferon**
- Inflammatory responses in allergy are caused by the release of one of the mast cells– **Histamines**
- Physiological barrier is a– **Acid in stomach**
- Cytokine barriers are– **Interferons**
- The immune response is responsible for graft rejection– **Cell-mediated immune response**
- The secondary lymphoid organ is– **Lymph nodes, Peyer's patches, Appendix**
- ..... is a organ located near the heart beneath the breast bone– **Thymus**
- After getting into the person's body virus first enters into the– **Macrophages**
- The injection given against the snake venom contains– **Preformed antibodies**
- Colostrum provides the infant with– **Passive immunity**
- Passive immunity can be obtained by injecting– **Antibodies**
- Type of immunoglobulin present in colostrum/only mother's milk is– **IgA**
- Neutrophils and monocytes are important cells participating in– **Phagocytosis**
- Characters of acquired immunity are– **Specificity of antigen, Retains memory**
- Treatment of snake bite by antivenom is providing– **Artificial acquired passive immunity**
- The type of barriers under innate immunity, the saliva in the mouth and the tears from the eyes belong– **Physiological barriers**
- Short-lived immunity acquired from mother to foetus across placenta or through mother's milk to the infant is categorized as– **Passive immunity**
- Vaccination works by producing– **Memory lymphocytes**
- Damage to thymus in a child may lead to– **Loss of cell mediated immunity**
- The most active phagocytic white blood cells are– **Neutrophils and monocytes**

7.3 AIDS

- The genetic material of HIV is– **ssRNA**
- The human immuno deficiency virus is– **An enveloped, RNA genome containing retrovirus**
- Viral DNA after being converted from viral RNA by X, incorporates into host genome to undergo replication. 'X' is– **Reverse transcriptase**

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- The cells called 'HIV factory' is– **Macrophages**
- HIV is a retrovirus that attacks– **Helper T-cells**
- Decrease in the number of helper T-cells is characterized by– **AIDS**
- Disease is caused by the member of Retro-virus group– **AIDS**
- HIV causes reduction in– **Helper T- lymphocytes**
- Hepatitis B and AIDS are– **Transmitted through infected blood**
- The cell in the human body invaded by the human immunodeficiency virus (HIV) is– **Helper T- lymphocytes**
- There is always time lag between the infection and appearance of the symptoms of that disease– **AIDS**
- AIDS can spread– **Infected needles & syringes**
- AIDS is due to– **Reduction in number of helper T-cells**
- Full form of AIDS is– **Acquired immuno deficiency syndrome**
- The AIDS test is known as– **ELISA**
- Viral DNA after being converted from viral RNA genome with the help of X, incorporates into host genome to undergo replication. 'X' is– **Reverse transcriptase**
- At stage of HIV infection does one usually show symptoms of AIDS– **When HIV replicates rapidly in helper T-lymphocytes and damages large number of these**
- Development of vaccine is difficult for AIDS because gene– **Undergoes mutation at rapid rate**

7.4 Cancer

- The process of spreading the cancerous cells to distant site is known as– **Metastasis**
- Cancer cells do not exhibit the property of– **Contact inhibition**
- A person suffering from leukaemia has– **Increased number of WBCs**
- A chemical carcinogen present in tobacco smoke is a major cause of– **Lung cancer**
- Major factors that cause cancer are– **Oncogenes and carcinogens**
- Oestrogen works in cancer as– **Tumour promoters**
- Techniques is safest for the detection of cancers– **Magnetic resonance imaging (MRI)**
- α-Interferon is used in– **Cancer treatment and Viral growth inhibition**
- Non-infectious disease is a major cause of death in human– **Cancer**
- The rapid growth and division of cancer cells by– **Breakdown of normal gene regulation**
- Techniques like radiography (use of X-rays), CT scanning in relation with MRI are very useful to detect an uncontrolled division of abnormal cell of internal organ- **Cancer disease**
- Ionization radiation that cause cancer– **γ - Rays**
- MRI is– **Strong magnetic field and non - ionization radiation**
- The substance given to cancer patients in order to activate their immune system and destroy tumor is– **α - interferons**
- The genes concerned with the production of cancer are called– **Oncogenes**
- Alteration of genes leads to cancer– **Cell proliferation gene (proto-oncogenes)**
- Bone marrow test is beneficial in case– **Leukemia**
- Treatment of cancer, are used– **Radiation therapy, Surgery and chemotherapy, Immunotherapy**
- The most feared property of malignant tumors is– **Metastasis**
- Carcinogenic agent is– **X-ray radiation, UV radiation, Nicotine**
- The spread of cancerous cells to distant sites is termed as– **Metastasis**

7.5 Drugs and Alcohol Abuse

- Heroin is commonly called as– **Smack**
- Marijuana is extracted from– **Dried leaves of Cannabis sativa**
- Cannabinoid receptors present principally in– **Brain**
- Charas and ganja are the drugs which affect– **Cardiovascular system**
- Cocaine is commonly called as– **Coke, Crack**
- Erythroxylum coca, Atropa belladonna, Datura stramonium plants possesses– **Hallucinogenic properties.**
- The drug that is used as medicine to help patients cope with depression and insomnia– **Amphetamines, Barbiturates**
- Opiate narcotic is– **Morphine**
- The addictive chemical present in tobacco is– **Nicotine**
- Level of ..... hormones get elevated by the intake of nicotine– **Adrenaline, nor-adrenaline**
- The chronic use of alcohol results in– **Cirrhosis and nervous system damage**

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- The period between _____ of age may be thought of as adolescence period– **12-18 yrs.**
- _____ of Atropa belladona is the drug 'belladona' obtained– **Dried leaves and roots**
- Cirrhosis of the liver is caused by– **Alcohol**
- Tobacco smoke contains carbon monoxide is– **Reduces the oxygen-carrying capacity of blood**
- Smoking addiction is harmful because it produces polycyclic aromatic hydrocarbons, causes is– **Cancer**
- The affect central nervous system is– **Opioid**
- Diacetylmorphine is– **Opioids**
- The drug is taken by sports person– **Cannabinoids**
- The drug relieves intense pain are– **Opioids**
- The plant will show hallucination property– **Erythroxylum coca**
- ..... is a CNS stimulant as it interferes with the transport of the neuro-transmitter ..... **Cocaine, dopamine**
- Organ most affected by alcohol is– **Cerebellum**
- Fatty liver syndrome is due to excessive intake of– **Alcohol**
- Ingestion of Marijuana leads to illusions and alters the thoughts, feelings and perceptions of a person, Marijuana is a– **Hallucinogen**
- marijuana is obtained from– **Cannabis sativa**
- Cirrhosis of liver is– **Shrinkage & fibrosis of liver**
- One of the act as depressant and slows down body functions– **Heroin**
- Internal bleeding, muscular pain, blockage of intestinal passage and anaemia are symptoms of infection by– **Ascaris**

7.6 Miscellaneous

- In humans, receptors for opioids are present in– **Central nervous system, Gastrointestinal tract**
- _____ disproved "Good humor hypothesis"– **William Harvey**
- An insect bite may result in inflammation of that spot. This is triggered by the alarm chemicals such as– **Histamine**
- The organisms ..... cause diseases in plants and animals are called– **Pathogens**
- The chemical test that is used for diagnosis of typhoid is– **Widal**
- The sporozoites that cause infection when a female Anopheles mosquito bites a human being are formed in– **Gut of mosquito**
- The disease chikungunya is transmitted by– **Aedes mosquitoes**
- In malignant tumors, the cells proliferate, grow rapidly and move to other parts of the body to form new tumors. This stage of disease is called– **Metastasis**
- When an apparently healthy person is diagnosed as unhealthy by a psychiatrist, the reason could be that– **The patient shows behavioural and social maladjustment**
- AIDS is caused by HIV. Among the one is not a mode of transmission of HIV– **Shaking hands with infected persons**
- 'Smack' is a drug obtained from the– **Latex of Papaver somniferum**
- The substance produced by a cell in viral infection that can protect other cells from further infection is– **Interferon**
- Antibodies present in colostrum ..... protect the new born from certain diseases is– **IgA type**
- Tobacco consumption is known to stimulate secretion of adrenaline and noradrenaline. The component causing this could be– **Nicotine**
- Antivenom against snake poison contains– **Antibodies**
- Spleen is a– **Lymphoid tissue**
- The glands is large sized at birth but reduces in size with ageing– **Thymus**
- Haemozoin is– **Toxin released from Plasmodium infected cells**
- A person with sickle-cell anaemia is– **Less prone to malaria**
- In gene therapy of Adenosine Deaminase (ADA) deficiency, the patient requires periodic infusion genetically engineered lymphocytes because– **Genetically engineered lymphocytes are not immortal cells**
- The infections stage of Plasmodium that enters the human body is– **Sporozoites**
- The immune responses is responsible for rejection of kidney graft– **Cell-mediated immune response**
- Drug called 'Heroin' is synthesized by– **Acetylation of morphine**
- ..... part of poppy plant is used to obtain the drug "Smack"– **Latex**
- ..... Disease does mosquito transmitted pathogen cause chronic inflammation of lymphatic vessels– **Elephantiasis**

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EXAM POINT

The Diseases	
Broad palm with single palm crease is visible in a person suffering from– **Down's syndrome**	**NEET (UG) 07.05.2023**
The disease caused due to deposition of iron particles in tissues is– **Siderosis**	**AP EAPCET-10.05.2023, Shift-II AP EAPCET – 24.04.2019 Shift-II**
Tropical splenomegaly syndrome is a symptom of this disease– **Malaria**	**AP EAPCET-10.05.2023, Shift-II**
Phenylketonuria, sickle cell anemia and cystic fibrosis are caused respectively due to– **Chromosome 12, Chromosome 11, Chromosome 7**	**AP EAPCET-11.05.2023, Shift-I**
Kwashiorkor and beri-beri are– **Deficiency diseases**	**AFMC-2005**
Tay Sach's disease is due to– **Mutation in hexosaminidase - A**	**MGIMS Wardha-2007**
Leprosy is also called as– **Hansen's disease**	**BVP-2012 / BHU PMT - 2011, MGIMS Wardha-2007 / Haryana PMT-2002**
Critical state of disease is called– **Acme**	**AMU -2000**
Cholera, leprosy and diphtheria are– **Bacterial diseases**	**Manipal-2000**
The scientific name of pinworm of man is– **Enterobius vermicularis**	**Manipal-2000**
DPT vaccine is given for– **Diphtheria, whooping cough, tetanus**	**Manipal-2000**
Achondroplasia is a disease related with the defect in the formation of– **Cartilage**	**JIPMER-2013**
Congenital diseases are– **Diseases present at birth**	**Haryana PMT-2003**
The bacterium Bdellovibrio bacteriovorus is– **Parasite**	**AP EAMCET-1999**
The organism that carries a disease from one organism to another is called– **Vector**	**HP CET-2012**
If a person shows production of interferons in his body the chance are that he has got an infection of– **Measles**	**VMMC-2013, 2003**
The interval between infection and appearance of disease is known as– **Incubation period**	**AMU-2002**
Amoebiasis in human is acquired through– **Contamination of food with cysts**	**J & K CET - 2003 / AMU-2001**
Marasmus in children is caused by deficiency of– **Protein**	**MGIMS Wardha-2013**
Christmas disease is another name for– **Haemophilia -B**	**MGIMS Wardha-2010**
Pullorum disease of poultry is caused by– **Salmonella**	**MGIMS Wardha-2010**
The chief advantage of encystment of an Amoeba is– **The ability to survive during adverse physical conditions**	**MGIMS Wardha-2010**
Kala - azar disease is transmitted by– **Phlebotomus**	**MGIMS Wardha-2003**
Pebrine is a disease of– **Silk worm**	**JIPMER-2013**
Diabetes mellitus is due to lack of– **Insulin in blood**	**BVP - 2002**
Black water fever is caused by– **P. falciparum**	**UP CPMT-2013**
Disorders like alkaptonuria and phenylketonuria are referred to as– **Congenital disease**	**Assam CEE-2014**
A microbial disease that spreads over a very large geographic area is called– **A pandemic**	**SRM JEEE -2017**
Cri-du-chat syndrome in humans is caused by the– **Loss of half of the short arm of chromosome 5**	**AIPMT-2006**
G-6-P dehydrogenase deficiency is associated with haemolysis of– **RBCs**	**AIPMT-2005**
Anthrax is caused by– **Bacteria**	**BCECE-2015**
An autoimmune disease is– **Myasthenia gravis**	**AIIMS-2011**
Non-pathogenic bacteria of colon is– **Escherichia coli**	**AIIMS-2001**

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Viral diseases have no cure because– **Viruses can multiply repeatedly within the host cell**	**AIIMS-2001**
Non-communicable disease is a– **Arthritis**	**J&K CET-2000**
The infectious and contagious bacterial disease that affects cattle, buffaloes, horses, sheeps and goats, is– **Anthrax**	**J&K CET-2010**
Pellagra is caused due to deficiency of– **Niacin**	**J&K CET-2011 / VMMC - 2011 / Manipal-2001**
Black foot disease occurs due to– **Arsenic**	**J&K CET-2011**
Oocysts in the stomach of female Anopheles is discovered by– **Ronald Ross**	**BVP-2009**
Toxin produced by tetanus affects– **Voluntary muscles**	
A certain patient is suspected to be suffering from Acquired Immuno Deficiency Syndrome. The diagnostic technique will recommend for its detection– **ELISA**	**AIPMT (Screening)-2011, BVP - 2004**
The state that HIV replicates rapidly in helper T-lymphocytes and damages larger number of these cells, which infection show– **Symptoms of AIDS**	**AIPMT (Screening)-2011**
In Humans-Common Diseases	
The toxic substance 'haemozoin' responsible for high fever and chill, is released, diseases is– **Malaria**	**Karnataka CET-20.05.2023**
Difficulty in breathing, fever, chills cough, headache are symptoms of– **Pneumonia**	**Karnataka CET-20.05.2023**
World Malaria day celebrated on– **25th April**	**TS EAMCET 10.05.2023 Shift-I**
Inhalation of iron particles causes– **Pneumoconiosis**	**AP EAPCET-11.05.2023, Shift-I**
The fungal disease among the– **Ring worm**	**AP EAPCET-23.05.2023, Shift-I Rajasthan PMT -1996**
The nocturnal periodicity is exhibited by– **Microfilaria**	**AP EAPCET-22.05.2023, Shift-II**
The bacterial disease is found in chickens, is– **Fowl cholera**	**WB JEE-2006**
Sensation of stomach pain is due to– **Interoceptors**	**Punjab MET-2009**
Genus of insects prefer to breed in clean water and their larvae lie parallel to the surface of water, that is– **Anopheles**	**WB JEE-2012**
The life cycle stages of Wuchereria bancrofti that is infective to man– **3rd stage larva**	**WB JEE-2012**
The life cycle stages of malarial parasite is responsible for relapse of malarial symptoms is– **Hypnozoite**	**WB JEE-2012**
Mention the Incubation Period of Plasmodium vivax is– **10-14 days**	**WB JEE-2009 / BCECE-2007**
Tetanus disease is caused by– **Bacteria**	**AFMC - 2005 / UP CPMT-2004**
Infection of Enterobius is caused to man is by– **Contamination**	**Punjab MET-1999**
Microfilaria is found in the peripheral blood of man during– **Night time**	**Punjab MET-1999**
The infective stage of Entamoeba histolytica is– **Cyst**	**Punjab MET-1999**
Communicable disease is– **Diphtheria**	**Uttarakhand-2005 / Punjab MET-1999**
A disease caused by one of the smallest viruses is– **Poliomyelitis**	**BCECE-2011**
In saliva of mosquito ..... is present during its bite– **Anticoagulant**	**Rajasthan PMT-1996**
Polio is a– **Viral disease**	**UP CPMT-2003**
Infection by the bacterium that is responsible for peptic ulcer in human being is– **Helicobacter pylori**	**Tripura JEE-2018**
Fear of dirt, disease and contaminants is– **Mysophobia**	**AFMC -2011**

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Typhoid fever is caused by a species of– **Salmonella**	**UP CPMT-2010 / DUMET-2010**
Tuberculosis is caused by– **Mycobacterium**	**DUMET-2008**
The malnutrition disease in man is– **Potbelly syndrome**	**J&K CET-2009**
Genus Aedes of mosquito is a vector of– **Dengue fever**	**Rajasthan PMT-1998**
Hepatitis B is transmitted through– **Blood transfusion, Intimate physical contact, Sexually**	**AMU-1999**
Fever in malaria is due to– **Release of merozoites from red blood cells**	**AMU-2006 / MGIMS Wardha-2004**
Severe Acute Respiratory Syndrome (SARS), a fatal disease is caused by– **A variant of common cold virus (corona)**	**VMMC-2014**
The pair of disease caused by virus is– **Rabies, mumps**	**AMU-2006**
The only mammal, other than man which suffer from leprosy is– **Dasypus**	**Manipal-2013**
Widal Test is a confirmation test for– **Typhoid**	**AP EAMCET 10.05.2023 Shift-I AP EAMCET-25.09.2020 Shift-II / JCECE-2018, KVPY SA-2015 / J&K CET-2014, 2012**
Bone softening disease Itai-Itali occurred first– **Japan**	**VMMC-2005 / AMU-2004**
Athletes foot is caused by– **Tinea pedis**	**AMU-2012**
Hepatitis-B virus is a– **Hepadnavirus**	**AMU-2012**
Diphtheria is caused by– ***Corynebacterium diphtheriae***	**CG PMT-2006**
The effect of cigarette smoking and radon in combination on lungs is– **Synergistic**	**JIPMER-2013**
Tissue injury causing redness, swelling pain and production of heat and fever are localized manifestations of _____ response. **Inflammatory**	**MHT CET-06.10.2020 Shift-I**
Used for external application in the cure of leprosy is– **Neem seed oil**	**VMMC-2010**
Quinine used for treatment of malarial fever extracted from– **Cinchona officinalis**	**BCECE-2008 / Haryana PMT-2006**
Pandemic disease is– **Influenza**	**CG PMT-2010**
The insect which spreads the yellow fever is– **Aedes**	**AP EAMCET-2000**
Malignant malaria is caused by– **Plasmodium falciparum**	**Rajasthan PMT-2006**
The disease caused by a helminth parasite of man that has a gastropoda members as an intermediate host is– **Bilharziasis**	**AP EAMCET-1999**
Sprinkling of oil on stagnant water helps in the control of malaria because– **Mosquito larvae get asphyxiated (cannot breath)**	**AFMC-2001**
Signet ring stage of Plasmodium is found in– **RBC of man**	**CMC Ludhiana-2011**
A man shows outbursts of emotions, quarrelsome behaviour and conflicts with others is suffering from– **Borderline personality disorder**	**CMC Ludhiana-2010**
The conditions though harmful in itself, that is also a potential savior from a mosquito borne infectious disease is– **Sickle cell anaemia**	**MGIMS Wardha-2010**
The plant that is a medicine for respiratory disorders obtained – **Ephedra**	**JIPMER-2010**
Water- borne disease is– **Cholera**	**KVPY (SA)-2010**
The kind of therapy that was given in 1990 to a four-year-old girl with Adenosine Deaminase (ADA) deficiency is– **Gene therapy**	**NEET-2016 Phase-II**
The term "oriental sore" is associated with– **Leishmania tropica**	**VMMC-2011 / BVP-2005 / CG PMT-2005**
Malaria is a common disease caused by– **Plasmodium**	**J&K CET-2004**
Major cause of anaemia is deficiency of– **Fe^{2+}**	**Uttarakhand PMT-2011**
Pneumonia is caused by– **Streptococcus pneumonia, Haemophilus influenzae**	**Karnataka CET-2021**

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Human protein α -1- antitrypsin is used to treat that disease is– **Emphysema**	**GUJCET-2021**
Polio causes– **Paralysis**	**J&K CET-2002**
The disease does mosquito transmitted pathogen cause chronic inflammation of lymphatic vessels is– **Elephantiasis**	**NEET-2018**
Both sickle cell anemia and Huntington's chorea are– **Congenital disorders**	**AIPMT-2006**
Pathogenicity of Salmonella typhi is due to____ present in its outer membrane– **Lipopolysaccharides**	**MHT CET-2019**
A change in a wart or mole on the skin is observed in– **Melanoma**	**MHT CET-2016**
The only drug effective in the treatment of filariasis, hetrazan was discovered by– **Dr. Yellapragada Subba Rao**	**TS EAMCET-03.05.2018, 2017 Shift-I**
In humans, common cold is caused by– **Rhinovirus**	**Karnataka CET-2017**
In man, Epidermophyton causes– **Ring worm**	**TS EAMCET-30.07.2022 Shift-I**
When children play bare footed in pools of dirty water and flood water, they may suffer from disease like– **Leptospirosis and bilharzia**	**AIIMS-2006**
Formation of non - functional methaemoglobin causes blue- baby syndrome. This is due to– **Excess of nitrates in drinking water**	**AIIMS-2005**
The brain disease caused due to accumulation of amyloid β-peptide is– **Alzheimer's disease**	**AIIMS-2014**
Type-1 diabetes is – **Insulin dependent**	**AIIMS-27.05.2018 Shift-I**
Just as Xenopsylla is a vector to Yersinia pestis, so is– **Phlebotomus to Leishmania donovani**	**AIIMS-2003**
Continued consumption of a diet rich in butter, red meat and eggs for a long period may lead to– **Hypercholesterolemia**	**AIIMS-2003**
Haemophilus influenzae causes this disease in human beings– **Pneumonia**	**TS EAMCET-31.07.2022 Shift-I / AMU-2014**
Plasmodium in RBC of human beings discovered by– **Laveran**	**AIPMT-1991**
The symptoms that indicate red sickness is– **Ulcerated skin, nausea and loss of hair**	**AIPMT-1997**
The diseases that is now considered completely eradicated from India– **Small pox**	**AIPMT-1997**
Dum-dum fever is caused by– **Leishmania donovani**	**Punjab MET-2011**
The organ that is enlarged in malarial patient is– **Spleen**	**Rajasthan PMT-1999**
The disease that is the result of thiamine deficiency is– **Beri-beri**	**Haryana PMT-2001**
Dysentery disease spread by– **Entamoeba histolytica**	**Rajasthan PMT-1995**
Cerebral malaria is spread by– **Plasmodium falciparum**	**Rajasthan PMT-1995**
The chemical used in National Malaria Eradication Programme is– **DDT**	**BVP-2007 / MGIMS Wardha-2006**
Yellow colour of eyes and skin in jaundice caused by– **Bilirubin**	**JCECE-2014**
Saline solution is given to patients of Cholera because– **Na^+ prevents water loss from body**	**AIPMT-2000**
The disease of man that is similar with cattle's, bovine spongiform encephalopathy– **Jakob-creutzfeldt disease**	**AIPMT-2000**
Cirrhosis of liver is caused by the chronic intake of– **Alcohol**	**AIPMT (Screening)-2012**
Common cold differs from pneumonia in, that– **Pneumonia pathogen infects alveoli whereas the common cold affects nose and respiratory passage but not the lungs**	**AIPMT (Screening)-2012**
A patient brought to a hospital with myocardial infarction is normally immediately given– **Streptokinase**	**AIPMT (Screening)-2012**
The pathogen Microsporum responsible for ringworm disease in humans belongs to the same Kingdom of organisms at that of– **Rhizopus, a mould**	**AIPMT (Mains)-2011**
Interferons are synthesized in response to– **Viruses**	**AIPMT-2001**

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The process by which a new structure is formed in the tissue of the host during parasitic infection– **Neoplasia**	**AP EAMCET-2010**
Pulse – Polio programme is organized in our country to– **Eradicate polio**	**AP EAMCET-03.09.2021 Shift-I**

Immunity and its types

…… antibody is pentamer– **IgM**	**AMU-2015,1999**
Histamine is secreted by– **Mast cell**	**UP CPMT-2003 / AFMC-2002**
The technique of production of monoclonal antibodies was developed by– **Milstein and kohler**	**VMMC-2013**
In the cell mediated immuno response, T-lymphocytes divide and secrete– **Cytokines**	**AFMC -2009**
The predominant antibody in saliva is– **IgA**	**DUMET-2010**
The immune processes that is most effectively controlled by anti-histamines is– **IgE-mediated exaggerated immune response**	**KVPY SB & SX-2019**
An antibody is a– **Molecule that specifically inactivates an antigen**	**HP CET-2011 / BCECE-2006 / VMMC-2005, AMU-2004 / Haryana PMT-1999**
An anti-viral substance, known to prevent the synthesis of new virus in the cell, is known as– **Interferons**	**Haryana PMT 2002 / AFMC - 2001 / JIPMER-1999**
Magic bullets are the– **Monoclonal antibodies**	**VMMC - 2015 / J&K CET-2009**
Passive immunity is– **Inherited from parents**	**J&K CET-2014**
The type of antibodies produced during the allergic reaction is– **Ig E**	**Karnataka CET-2022 / AMU-2012, CG PMT-2010 / BCECE-2005**
The product of that immune system attaches to bacteria, making them easier to be eaten by white blood cells is– **Antibody**	**J&K CET-2012**
B-lymphocytes alre– **Formed in bone marrow**	**BCECE-2014**
Immediate hypersensitivity which result in the release of histamine and other inflammatory substances is mediated by– **IgE**	**AMU-2010**
Immunoglobulins are proteins that show …. Structure– **Quaternary**	**AMU-2010**
An antigen in the white blood corpuscles of man is known as– **HLA**	**AMU -2000**
The antibody dependent cytotoxicity is seen in– **Non-compatible blood transfusion**	**AP EAMCET-2003**
Antibody is produced by– **B - Lymphocyte**	**Haryana PMT-2005 / APEAMCET - 2001**
Immunoglobulins are made up of– **Four polypeptide chains**	**BVP - 2005 / Haryana PMT-2004 / Manipal-2003**
The most abundant type of antibodies is– **IgG**	**MGIMS Wardha-2007 / JIPMER-2001**
Antigen is bound to antibody through– **Electrostatic interaction**	**BVP-2013**
The antibody classes provides some degree of immune protection to fetus is– **IgG**	**Tripura JEE-2022**
The number of immunoglobulin classes found in human being is– **5**	**Tripura JEE-2021**
The molecular weight of lgG antibody is– **150, 000 Daltaons**	**Rajasthan PMT-2000**
Thymosin is the hormone of the thymus and it stimulates the development of diseases fighting– **T-lymphocytes cells**	**Rajasthan PMT-2000**
The cell types that is a part of innate immunity is– **Skin epithelial cells**	**KVPY SA-2015**
Antibodies are– **Immunoglobulins**	**BCECE-2007**
Short-lived immunity acquired from mother to foetus across placenta or through mother's milk to the infant is categorized as– **Passive immunity**	**MGIMS Wardha-2010**

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The reaction between antibodies and soluble antigens is– **Precipitation**	**AMU-1995**
_____quickly reduce the symptoms of allergy– **Adrenaline**	**GUJCET-2022**
The disease that is caused by allergic reactions is– **Asthma**	**UP CPMT-2013**
A person is injected with globulin against hepatitis. This is– **Artificially acquired passive immunity**	**BVP-2004 / DUMET-2003**
The cells that are related with inflammatory reactions and immediate hypersensitivity is– **Mast cells**	**BVP-2005**
The element that is important to maintain structure of immunoglobulin is– **S**	**GUJCET-2008**
Grafted kidney may be rejected in a patient due to– **Cell-mediated immune response**	**AIPMT (Re-Exam)-2015**
The affinity of an antibody can be determined by measuring– **The amount of antibody bound at various antigen concentrations**	**SRM JEEE -2017**
The treatment of snake-bite by antivenom is an example of– **Artificially acquired passive immunity**	**KVPY SA-2014 / Haryana PMT-2004 / AIIMS-2004**
The diseases that is due to an allergic reaction is– **Hay fever**	**AIPMT-1995**
Antigens are present– **On cell surface**	**AIPMT-1995**
In higher vertebrates, the immune system can distinguish self-cells and non-self. If this property is lost due to genetic abnormality and it attacks self- cells, then it leads to **Auto-immune disease**	**NEET-2016 Phase-I**
The letter T in T-lymphocyte refers to– **Thymus**	**AIPMT-2009**
Use of anti-histamines and steroids give a quick relief from– **Allergy**	**AIPMT-2009**
Globulins contained in human blood plasma are primarily involved in– **Defense mechanisms of body**	**AIPMT-2009**
A person shows symptoms like sneezing, watery eyes, running nose and difficulty in breathing, on exposure to certain substances in air. The type of antibody that is produced during such condition– **IgE**	**Karnataka CET-2019**
Agglutination occurs in blood present in a test tube. This indicate– **Antigens are present on R.B.C.**	**AIPMT-1999**
The monomer forms of the antibodies among the groups– **IgD, IgE, IgG**	**AP EAMCET-12.07.2022 Shift-II**
The progenitors that are formed in bone marrow and differentiated elsewhere are– **Pre-T Cell**	**AP EAMCET-2005**
Increased asthmatic attacks in certain seasons are related to– **Inhalation of seasonal pollen**	**AIPMT-2007**
If you suspect deficiency of antibodies in a person, would you look for confirmatory evidence– **Serum globulins**	**AIPMT-2007**
The recognised as the father of Immunology is– **Edward Jenner**	**Karnataka CET-2008**

Vaccination and Immunisation

Vaccine for influenza is– **Inactivated whole agent vaccine**	**AP EAPCET-11.05.2023, Shift-II**
BCG vaccine is used against– **Tuberculosis**	**JIPMER-2000, AFMC-2005, 2009**
The Diphtheria, Pertussis, Tetanus (DPT) vaccine consists of– **Toxoid of Diphtheria, Tetanus and heat killed whole cells of Pertussis**	**KVPY SA-2016**
Allergic reaction can be controlled by– **Antihistamines**	**AMU-1999**
Antibody that is capable of crossing the placenta is– **IgG**	**Tripura JEE-2019**
All antibodies are commonly known as– **Immunoglobulin**	**Tripura JEE-2019**
The term vaccine was introduced by– **Edward Jenner**	**Rajasthan PMT-2011**
DNA vaccines are called– **Third generation**	**CG PMT-2011 / VMMC-2003**
VCRC stand for– **Vector Control Research Centre**	**BCECE-2003**

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The vaccine of Hepatitis-B is a– **Second generation vaccine**	**MGIMS Wardha-2003**
Scientific basis of vaccination is– **Louis Pasteur**	**Manipal-2006**
Fastest distribution of some injectible material / medicine and with no risk of any kind can be achieved by injecting it into the– **Veins**	**AIPMT (Mains)-2010**
A person likely to develop tetanus is immunized by administering– **Weakened germs**	**AIPMT-2009**
He was awarded the Nobel Prize in 1951 for the development of vaccine for yellow fever, that is– **Max Theiler**	**JIPMER-2015**
Polio inactivated vaccine is also called– **Salk vaccine**	**AP EAMCET-12.07.2022 Shift-II**
Immune System	
The primary lymphoid organ are the– **Thymus gland and Red bone marrow**	**AP EAPCET-22.05.2023, Shift-II**
The removal or absence of thymus in early life shall bring about– **Lack of lymphocytes, Lack of antibodies, decreased immune response**	**Punjab MET-2009**
lg is produced in primary immune response– **IgM**	**WB JEE-2009**
Total number of variable segments that are present in the basic structure of antibody molecule is– **Four**	**WB JEE-2010**
The best explains the difference between an Epitope and an antigen is– **An Epitope is the part of an antigen where an antibody or lymphocyte receptor binds**	**AMU-2015**
Broad spectrum antibiotic– **Acts on a variety of pathogenic micro organisms**	**HP CET-2011**
The organ that can be called a sort of "blood bank" is– **Spleen**	**MGIMS Wardha-2008**
Reticular tissue forms the supporting frame work of– **Bone marrow, Lymph gland, Spleen**	**AMU-1999**
Iron is stored in bone marrow as– **Ferritin**	**MGIMS Wardha-2011**
Immunodeficiency makes a person highly susceptible to infection. It is caused by– **Lack of both B and T cells**	**AFMC-2006**
The inflammatory reactions induced by histamine is– **Vasodilation of peripheral blood vessels**	**J&K CET-2007**
Antiserum is a serum containing– **Antibodies**	**CG PMT-2011**
The cell of immune system that cause pore formation at the surface of the plasma membrane– **Killer T-cell**	**CMC Vellore-2010**
The Adenosine deaminase deficiency results into– **Dysfunction of Immune system**	**NEET-2021**
An insect bite may result in inflammation of that spot. This is triggered by the alarm chemicals such as– **Histamine and kinins**	**AIIMS-2005**
Lysis of foreign cell is mediated through– **IgM and IgG**	**AIIMS-2002**
Immune tolerance is display– **B-cells, T-cells**	**AIIMS-2002**
Immunity tolerance is developed by– **Interaction with the antigen**	**AIIMS-26.05.2019 Shift-II**
Minute quantity of hormones and steroid are detected by– **Radio immunoassay**	**AIPMT-1999**
The enzymes are released from the cytotoxic T-lymphocytes that help in the Apoptosis– **Granzymes**	**AP EAMCET-11.07.2022 Shift-II**
AIDS	
Individuals, who have multiple sexual partners, Drug addicts, who take drugs intravenously, Individuals, Who require repeated blood transfusions,this activity are high risk of– **HIV infection**	**VMMC-2011**
In AIDS, HIV Kills– **T- helper cell**	**WB JEE-2009, MGIMS Wardha-2007**

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ELISA test is used for detection of–	**Antibodies, Viral disease, AIDS**	**UP CPMT-2003**
Full form of AIDS–	**Acquired Immunodeficiency Syndrome**	**J&K CET-2014**
AIDS virus contains–	**RNA with protein**	**Uttarakhand PMT-2009, BHU PMT (Screening)-2009**
AIDS disease was first reported in–	**USA**	**VMMC-2002**
AIDS is caused by a–	**Retrovirus**	**J&K CET-2012**
Viral STD disease is–	**AIDS**	**CG PMT-2006**
AIDS related complex (ARC) is a disease, which leads to fever, swollen lymph nodes, night sweats, loss in weight etc represents–	**Initial form of AIDS**	**CG PMT-2006**
ELISA is used to detect viruses where the key reagent is–	**Alkaline phosphatase**	**CMC Ludhiana-2008 / VMMC-2007**
In India AIDS was reported in–	**1986**	**BCECE-2003**
The spread of AIDS is promoted by–	**Homosexuality, Immoral way of life, Use of infected needles in blood transfusion**	**AMU-2002**
Received Nobel Prize in 2008 for the discovery of HIV–	**Luc Montagnier**	**JIPMER-2016**

CANCER

Metastasis is–	**Spread of cancer cells to new sites**	**VMMC-2011**
The expanded name of MRI is–	**Magnetic Resonance Imaging**	**WB JEE-2012**
The carcinoma, a type of cancer, originates from–	**Epithelial tissue**	**WB JEE-2012**
The treatment of cancer with X- rays or gamma rays is called–	**Radiotherapy**	**VMMC-2013 / Haryana PMT-2002**
Cancer cells are more easily damaged by radiation than normal cells because they are–	**undergoing rapid division**	**Manipal-2012, 2007 / CMC Ludhiana-2009, JCECE-2009 / CG PMT-2006 / Haryana PMT-2003**
Antibodies, interferons are useful in treatment of–	**Cancer**	**KVPY SB & SX-2015**
Cancer causing genes (oncogenes) were discovered by–	**Bishop and Varmus**	**BVP-2012 / MGIMS Wardha-2007**
This tumor normally confined to their original location and do not spread to other parts of the body–	**Benign tumor**	**AFMC -2009**
Magnetic resonance based on–	**NMR scanning**	**HP CET-2011**
Prostate cancer causes is–	**Cadmium oxide**	**J&K CET-2009 / DUMET-2001**
The blood cancer is known as–	**Leukemia**	**VMMC-2002**
Cervical cancer can be caused by–	**Human papilloma virus**	**J&K CET-2012**
Aromatic amines used in the manufacture of synthetic dyes cause cancer of the–	**Urinary bladder**	**AMU-1999**
Interferon suppresses the pathogenic activity of–	**Viruses**	**AMU-2011 / VMMC-2006**
Hodgkins disease is–	**Cancer of the lymphoid tissue**	**Karnataka CET-2003**
Recently discovered anti-cancer drug is obtained from–	**Taxus**	**BVP-2013 / Haryana PMT-2009 / CG PMT-2009**
The most commonly used marker enzyme in clinical diagnosis of prostate cancer is–	**Acid phosphatase**	**Manipal-2015**
In humans retrovirus is considered as a cause of cancer because–	**in their genome there may be cellular proto oncogene**	**Manipal-2015**
Electron beam therapy is a kind of radiation therapy to treat–	**Certain types of cancer**	**Haryana PMT-2004**
Symptoms of radiation disease–	**Ulcerated skin, anaemia, nausea and loss of hair**	**Haryana PMT-2004**
Genes involved in cancer are–	**Oncogenes**	**VMMC-2008 / AMU-2008**
Cancer is related to–	**Uncontrolled growth of tissues**	**Haryana PMT-1999**

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It is normally a rare cancer but became a marker for AIDS/HIV patients– **Kaposi's sarcoma**	**AMU-2012**
Cancer characterized by a change in wart or mole on the skin is called– **Melanoma**	**MHT CET-07.10.2020 Shift-I**
Hela cells used in cell biology are– **Cancerous cells grown in cancer research laboratory, Cervical cancer cell derivatives**	**Haryana PMT-2008**
Cancerous cells spread through– **Lymph, Blood, Secondary growth of malignant tumour**	**Haryana PMT-2003**
Cancerous cells can easily be destroyed by radiations due to– **Rapid cell division**	**Rajasthan PMT-2007 / AIPMT-2002**
Carcinoma refers to– **Malignant tumours of the skin or mucous membrane**	**AIPMT-2003**
Used in the treatment of thyroid cancer– **I_{131}**	**AIPMT-2002**
Smoking addiction is harmful because it produces polycyclic aromatic hydrocarbons, the cause is– **Cancer**	**AIIMS-2008**
Fibroid (leiomyoma) uterus is a– **Benign tumor of uterus**	**AIIMS-26.05.2018 Shift-I**
Characteristics of cancer is– **Cancers show metastasis**	**AIIMS-26.05.2018 Shift-II**
A metastatic cancerous tumor is termed 'sarcoma' if the disorder is in– **Fibroblasts**	**AIPMT-1994**
Epithelial cancer is known as– **Carcinoma**	**AP EAMCET-11.07.2022 Shift-II**
Continuous exposure to vinyl chloride may cause cancer of the– **Liver**	**JIPMER-2015**
Reason of lung cancer– **Cement factory**	**AIPMT-2001**
Direct causes of cancer– **Obesity**	**GUJCET-2014**
Drugs and their effect	
Marijuana, hashish, charas and ganja are– **Halucinogens**	**TS EAMCET 10.05.2023 Shift-I**
Diacetyl morphine is also called as– **Smack**	**RE-NEET (UG)-06.06.2023 (Manipur)**
Morphine is extracted from– **Papaver somniferum**	**VMMC-2011 / Haryana PMT-2003 / JIPMER-2013**
Heroin is– **Diacetylmorphine**	**Rajasthan PMT-2006, 2004, Karnataka CET-2014**
Liver cirrhosis is caused by– **Excess alcoholism**	**BCECE-2005**
Reserpine is obtained from– **Rauwolfia serpentina**	**BCECE-2005 / Rajasthan PMT-1996**
The drug belladonna is obtained from– **Atropa**	**CG PMT-2011 / BVP-2010**
Quinine is obtained from– **Bark of Cinchona**	**UP CPMT-2003**
Mescaline an alkaloid is found in– **Lophophora williamsii**	**BHU PMT (Mains)-2005**
Cyclosporine and endospores are the drugs that are used as– **Immunosuppressants**	**VMMC-2014 / J&K CET-2009 / AIIMS-2002**
Medicine for curing respiratory problems is obtained from– **Ephedra**	**BCECE-2010 / MGIMS Wardha-2008**
Most commonly used analgesic during self medication by persons is– **Aspirin, Acetaminophen**	**AMU-2011**
Commercial opium is obtained from– **Unripened capsule**	**Rajasthan PMT-1998**
The alkaloids that are present in opium– **Codeine, Morphine, thebaine**	**CG PMT-2007**
The psychedelic drug is– **LSD, Marijuana, Bhang**	**Haryana PMT-2002**
Addiction of LSD will eventually lead to– **Hallucination**	**Haryana PMT-1999**
Most of the plant products used for drugs are– **Alkaloids**	**VMMC-2010**

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Tobacco smoke contains– **CO polycyclic aromatic hydrocarbons and tar**	**CG PMT-2010**
An alkaloid, which arrest cell division is obtained from– **Colchicum**	**CMC Vellore-2014**
Fatty liver syndrome is due to excessive intake of– **Alcohol**	**BCECE-2003**
Streptomycin was isolated first time by– **S. Waksman**	**MGIMS Wardha-2003**
Carcinogen present in cigarette smoke is– **Benzopyrene**	**JIPMER-2019**
Ergotamine tartrate extracted from Claviceps, is used for cure of– **Headache**	**AIIMS-2011**
A young drug addict used to show symptoms of depressed brain activity, feeling of calmness, relaxation and drowsiness, Possibly he was taking– **Valium**	**AIIMS-2005 / JIPMER-2007**
A drug addict showed symptoms such as increased appetite, chest pain, redness of eyes, increased urination. He was possibly taking– **Cannabis compounds**	**AIIMS-2014**
Microtubule depolymerizing drug such as colchicine is expected to– **Inhibit spindle formation during mitosis**	**AIIMS-2012**
Cocaine is a stimulant, which may cause addiction. It is an alkaloid obtained from– **Erythroxylum**	**AIIMS-2001 / Haryana PMT-2003, Manipal-2006**
Vinblastine is obtained from – **Catharanthus roseus**	**AIIMS-27.05.2018 Shift-I**
Women who consumed the drug thalidomide for relief from vomiting during early months of pregnancy gave birth to children with– **Under developed limbs**	**AIIMS-2004**
Nicotine acts as a stimulant, because it mimic the effect of– **Acetylcholine**	**AIPMT-1995**
The use of prohibited drugs by athletes with the intention of improving athletic performance is called– **Doping**	**AP EAMCET-11.07.2022 Shift-II**
Vaccine is a– **Treated bacteria, virus & protein**	**AIPMT-1999**
The transport of which neurotransmitter is interfered by cocaine– **Dopamine**	**Karnataka CET-2020**
Alcohol abuse and its effect	
"AA" stands for– **Alcoholics Anonymous**	**BHU PMT (Mains)-2005**
Ethanol is used to treat methanol toxicity because ethanol– **Is a competitive inhibitor of alcohol dehydrogenase**	**KVPY SB & SX-2019**
Alcohol addiction is harmful because it causes– **Deposition of extra fat in liver**	**CG PMT-2007**
Alcohol depresses nervous system and acts as– **Sedative agents, Analgesic agent, Anesthetic agents**	**CG PMT-2010**
The disorder is associated with chronic alcoholism and malnutrition is– **Laennecs cirrhosis**	**AMU-2002**
In alcohol fermentation is– **Triose phosphate is the electron donor while acetaldehyde is the electron acceptor**	**AIPMT-2003**
The alcoholic beverage that will be formed by distillation is– **Brandy**	**AIIMS-27.05.2018 Shift-II**
Alcohol is the most socially accepted narcotic drug. Excessive consumption of alcohol leads to– **Cirrhosis of liver**	**Karnataka CET-2005**
A temporary feeling of an exaggerated joy, well being, pride and optimism associated with drugs and alcohol is known as– **Euphoria**	**AP EAMCET-12.07.2022 Shift-II**
Due to alcohol abuse brain related diseases Korsakoff's syndrome occurs. Which nutrient is responsible for this syndrome– **Vitamin-B_1**	**JIPMER-2016**
How to Prevent and Control	
Mechanical support, enzyme circulation, protein synthesis and detoxification of drugs are function of– **ER**	**AFMC-2006**

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08.

MICROBES IN HUMAN WELFARE

8.1 Microbes in Household Products

- Big holes in swiss chesse are formed due to production of large amount of CO_2 by - **Propioni bacterium**
- Puffed up appearance of dough is due to– **Production of CO_2**
- Lactic acid bacteria (LAB)– **Partially digest the milk proteins**
- Bioactive molecule cyclosprine A is used– **As an immunosuppressive agent**
- Organism is useful in the preparation of Roquefort cheese– **Penicillium**
- The inoculum is added to the fresh milk in order to convert milk into curd, the term 'inoculum' here refers to– **A starter containing millions of Lab**
- The responsible for the formation and flavour of yogurt is– **Lactobacillus**
- The products are produced by fermentative activity of bacteria– **Dosa, Idli**
- Dough used for making dosa and bread are fermented respectively by– **Bacteria, Yeast**
- Curd is prepared from pasteurized milk by the process of curding. It is initiated by adding a starter culture of– **Lactobacillus bulgariens**
- ……. used in swiss cheese– **Propionibacterium shermanii**
- …. used in industrial preparation of ethanol– **Saccharomyces**
- Big holes in Swiss cheese are made by– **A bacterium that producing a large amount of carbon dioxide**
- The bacterium is used in the preparation of curd– **Lactobacillus**
- ……. is responsible for ripening of Roquefort cheese– **Fungi**
- For purpose of curdling, an inoculum is added to the milk. This inoculum contains– **Lactic acid bacteria**
- Saccharomyces is commonly used in the production of – **Ethyl alcohol**
- Yeast is used in the production of– **Bread & beer**

8.2 Microbes in Industrial Products

- Fruit juice are made clearer by the activity of– **Pectinases and proteases**
- The most significant discoveries of the twentieth century that greatly contributed towards the welfare of human society– **Penicillin in 1928 by Sir Alexander fleming**
- Aspergillus niger is used for commercial and industrial production of– **Citric acid**
- Statins used for lowering blood-cholesterol level, extracted from– **Yeast**
- The Enzymes are utilized for making the bottled fruit juices– **Pectinases and proteases**
- Alcoholic drinks that is produced without distillation– **Beer and Wine**
- The organisms that is used in the production of beverages– **Saccharomyces cerevisiae**
- The chemical substances produced by some microbes which can kill or retard the growth of other microbes are called– **Antibiotics**
- Ernst chain and Howard Florey's contribution was establishing the potential of penicillin as an – **Effective antibiotic**
- The antibiotics was extensively used to read American soldiers wounded in world war II– **Penicillin**
- The diseases are treated by antibiotics– **Plague, Diphtheria, Leprosy, Whooping cough**
- The diseases cannot be treated by using antibiotics– **Chicken pox**
- The unwashed culture plate of growing mould where Staphylococci could not grow lead to the discovery of which antibiotic– **Penicillin**
- ..... produced by bacterium Streptococcus and modified by genetic engineering is used as a "clot buster" for removing clots from the blood vessels of patients who have undergone myocardial infarction leading to heart attack– **Streptokinase**
- Monescus purpureus is a yeast commercially used in the production of– **Blood cholesterol lowering agent**
- ..... contains the end products formed during anaerobic respiration in yeast– **CO_2, C_2H_5OH and energy**
- Wine and beer are produced by– **Fermentation**
- One is useful as immunosuppressive agent in organ transplant– **Cyclosporin A**
- The produced by distillation– **Whisky and Rum, Brandy**
- Statin, used as blood-cholesterol lowering agent, is isolated from– **Monascus purpureus**
- ……help in removing oily stains from the laundry– **Lipase**
- Aspergillus niger produce– **Citric acid**
- …..used in detergents– **Lipase**
- Used in condition myocardial infarction– **Streptokinase**

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- First antibiotic was discovered is– **Penicillin**
- Cyclosporin A is produced by– **Trichoderma polysporum**
- The producer of butyric acid is– **Clostridium butaricum**
- The 'clot buster' produced by Streptococcus and modified by genetic engineering is– **Streptokinase**
- Yeast Saccharomyces cerevisiae is used in the industrial production of– **Ethanol**
- Acitic acid produced from- **Acetobactor aceti**
- Baker's yeast and Brewer's yeast is called– **Saccharomyces**
- Antibiotics are– **Produced by microbes, Act against microbes**
- The bread becomes soft and porous, when the yeast cells are mixed in the lump of dough of wheat flour, because – **Yeast produces CO_2 and alcohol, which gives softness to the bread**

8.3 Microbes in Sewage Treatment

- Sewage treatment removes suspended solids– **Primary treatment**
- ..... is put into anaerobic sludge digester for further sewage treatment– **Activated sludge**
- When domestic sewage mixes with river water the increased microbial activity uses up– **Dissolved oxygen**
- It will slow down the rate of degradation of organic matter, Death of bacteria & eventully breakage of flocs to activated sludge floes is reduced will occur– **Oxygen availability.**
- Waste water treatment generates a large quantity of sludge, ... can be treated by– **Anaerobic digesters**
- Methanogenic bacteria are not found in– **Activated sludge**
- The primary treatment of wastewater involves the removal of– **Stable particles**
- BOD of wastewater is estimated by measuring the amount of– **Oxygen consumption**
- The first step of sewage is– **Filtration**
- During the primary treatment of sewage, solid particles that settle down are called– **Primary sludge**
- The purpose of biological treatment of waste water is to– **Reduce BOD**
- The masses of bacteria held together by slime and fungal filaments to form mesh-like structures are called– **Flocs**
- The sewage treatment removes suspended solids is– **Primary treatment**
- Biochemical oxygen demand (BOD) in a river water– **Increases when sewage gets mixed with river water**
- Sewage water is treated before release into water bodies. The type of microbes used to treat sewage water is– **Heterotrophic microbes**
- A sewage treatment process in which bacterial flocs are allowed to sediment alter significant reduction of BOD and then passing into a settling tank is called– **Activated sludge treatment**
- The steps that are taken by the Ministry of Environment and Forests to protect rivers from water pollution– **Ganga Action Plan, Yamuna Action Plan**
- BOD is ..... in polluted water and ..... in potable water– **More, Less**
- In the sewage treatment, bacterial flocs are allowed to sediment in a settling tank. This sediment is known as– **Activated sludge**
- It is possible to estimate the amount of biodegradable organic matter in sewage water by measuring– **Biochemical oxygen demand**
- BOD is a measure of the– **Organic matter present in water**
- BOD of waste water is estimated by measuring the– **Oxygen consumption**
- In the sewage treatment, bacterial flocs are allowed to sediment in a settling tank, called– **Activated sludge**
- Initial step in primary treatment of sewage– **Sequential Filteration**
- ….. initiate the Ganga and Yamuna action plan– **Ministry of forest, Ministry of environment**
- The step large and small particles are removed from sewage through sequential filtration and sedimentation– **Primary treatment**
- The gases are produced from anaerobic sludge digester– **H_2S, CH_4, CO_2**
- Sewage treatment decomposer bacteria are recycled into starting process is– **Activated sludge treatment**
- During secondary treatment in a sewage treatment plant, sewage is treated untill– **BOD is decreased significantly**
- The effluent obtained after secondary treatment in a sewage treatment plant (STP) is– **Less polluting and is released into rivers and streams**
- STPs (Sewage Treatment Plants) make the sewage– **Less polluting**
- The greater BOD of waste water relates– **Decreased oxygen content of water**
- BOD of waste water is estimated by measuring the amount of– **Oxygen consumption**
- Process floating debris and grit are removed in STPs respectively– **Filtration & Sedimentation**

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- Domestic sewage mixes with river water– **The increased microbial activity uses up dissolved oxygen**
- Primary sludge is– **Floating debris removed by sequential filtration**

8.4 Microbes in Production of Biogas

- The gases that are produced in anaerobic sludge digesters– **Methane, Hydrogen sulphide & CO_2**
- The technology of biogas production from cow dung was developed in India largely due to the efforts of– **Indian Agricultural Research Institute and Khadi & Village Industries Commission**
- Methanogens, growing anaerobically on cellulosic material produce– **Methane, carbon dioxide and hydrogen**
- The bacteria that is present in the rumen of cattle– **Methanobacterium**
- Process of biogas production is– **Anaerobic process**
- These bacteria grow anaerobically on cellulosic material, produce large amount of methane along with CO_2 and H_2, and are collectively called methanogens. Examples of such bacteria is– **Methanobacterium**
- Methanogenic bacteria are not found in– **Activated sludge**
- Production of biogas in a biogas plant is determined by– **Floating cover**
- Methanogens, growing anaerobically on cellulosic material, produce– **Methane, carbon dioxide and hydrogen**
- Anaerobic breakdown of biomass, with the help of methanogenic bacteria is produced by - **Biogas**
- Indian agriculture research institute and Khadi village industries commission of _____ production from cow dung was developed in india largely to the efforts of - **Biogas**
- Gases are produced by methanogens– **Carbon dioxide**
- Biogas is produced by– **Anaerobic breakdown of biomass, With the help of methanogenic bacteria**
- In biogas plant, biowaste and slurry of dung are added to– **Digester**
- Initiation for the production of technology of biogas production– **Indian Agricultural Research Institute (IARI), Khadi & Village Industries Commission (KVIC)**
- Institutions have contributed to the production of biogas– **IARI, KVIC**
- The primitive prokaryotes responsible for the production of biogas from the dung of ruminant animals include the– **Methanogens**

8.5 Microbes in Biocontrol Agents

- Identify the microorganism which is responsible for the production of an immunosuppressive molecule cyclosporin A– **Trichoderma polysporum**
- Trichoderma, Baculovirus, Bacillus thuringiensis group of– **Biocontrol agents.**
- Methanogens produce– **Carbon dioxide**
- Lactic acid bacteria (LAB) grow in milk and convert it to curd and also improve its nutritional quality by increasing– **Vitamin B_{12}**
- The free-living fungus Trichoderma can be used for– **Biological control of plant diseases**
- The living organisms or their products which are used for the pest control are– **Biopesticides**
- When a natural predator (living organism) is applied on the other pathogen organisms to control them, this process is called as– **Biological control**
- Dragonflies are used to get rid of– **Mosquitoes**
- A microbial biocontrol agent that can be used to control butterfly caterpillars is– **Bacillus thuringiensis**
- Bacillus thuringiensis is used to control– **Insect pests**
- Bacillus thuringiensis (Bt) strains have been used for designing novel– **Bio-insecticides**
- The fungus Trichoderma has proved to be a useful microorganism for– **Biological control of plant pathogens**
- Integrated Pest Management (IPM) discourages the excessive use of– **Chemical pesticides**
- Biological control of soil - born plant pathogens proved to be a useful microorganism - **Trichoderma horzianum**
- A nitrogen fixing microbe associated with the fern Azolla in rice fields is– **Anabaena**
- Commonly present in root ecosystems and control various of plant pathogens– **Trichoderma**
- ..... discourage the excessive use of chemical pesticide– **IPM**
- Bacillus thuringiensis (Bt) strains has been used for designing novel– **Bio - insecticidal plants**

8.6 Microbes as Biofertilizers

- Mycorrhiza does not help the host plant in– **Increasing its resistance to insects**
- The reason that the chemical/synthetic fertilizers should be replaced by biofertilisers is that the farmer– **Are expensive, Are source of environmental pollution**
- Use of fertilisers and pesticides of biological origin, IPM (Integrated Pest Management) includes– **Organic farming**
- Living organisms used to enrich the nutrient quality of the soil are known as– **Biofertilisers**
- Biofertilisers are organisms that enrich the nutrient quality of the soil. ..... can be used as biofertilisers– **Nitrogen fixing cyanobacteria, Nitrogen fixing bacteria, Mycorrhizae**

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- Bring about soil nutrient enrichment, Maximise the ecological benefits are the living organisms– **Biofertilisers**
- Unicellular symbiotic organisms improve yield of legumes by– **Fixing atmospheric nitrogen and colonising roots of host plant**
- Biofertiliser can be used as– **Azolla anabaena**
- The symbiotic association between fungi and roots of higher plants is referred to as– **Mycorrhiza**
- ..... the microorganisms forms symbiotic association with plants and helps them in their nutrition– **Glomus**
- ..... the pairs fix atmospheric nitrogen while free living in soil– **Azospirillum and Azotobacter**
- Cyanobacteria are– **Autotrophs**
- Benefits shown by plants having symbiotic associations include(s)– **Tolerance to salinity & drought, Resistance to root-borne pathogens**
- The plants that shows symbiotic association with Rhizobium– **Sweet pea, Lentils, Alfalfa,**
- Biofertilisers includes – **Nostoc, Oscillatoria, anabaena**
- Non-symbiotic biofertiliser is– **Azotobacter**
- Farmers have reported over 50% higher yields of rice by using that biofertilisers– **Anabaena**
- The effective biocontrol agent of several plant pathogen is– **Bacillus thuringiensis**
- Baculoviruses are– **Specific insecticides**
- Autotrophic organism is widely distributed in aquatic and terrestrial environments and can fix atmospheric nitrogen– **Anabaena**
- The main source of biofertilizers– **Bacteria, Fungi and Cyanobacteria**
- No negative impacts on non target organisms– **Nucleopolyhedroviruses**
- A patient brought to a hospital with myocardial infarction is normally immediately given– **Streptokinase**
- TMV (Tobacco Mosaic Viruses) is – **Rod shaped**
- Blue - green algae, Rhizobium other nitrogen- fixing bacteria and mycorrhizal fungi are - **Biofertiliser**
- Bt cotton is resistant to– **Insects**
- _____ microbes is a proteinactious infectious agent– **Prions**
- A non-symbolic biofertilizer is– **Azotobacter**
- Free living, atmospheric nitrogen fixers are– **Azospirillum, Azotobacter**
- Cyanobacteria are– **Anabaena, Nostoc, Oscillatoria**
- Controlled by using biopesticides can be– **Insects, Diseases, Weeds**
- Glomus is a– **Mycorrhizal fungus**
- In paddy fields, act as an important biofertilizer– **Cyanobacteria**
- Some blue green algae are used as biofertilizer because they can– **Fix nitrogen**
- Living organisms used to enrich the nutrient quality of the soil are called as– **Biofertilizers**
- Micro-organisms forms symbiotic association with plants and helps them in their nutrition– **Glomus**
- Non-symbiotic biofertilizers– **Azotobacter**
- A free living nitrogen fixing cyanobacterium also forms symbiotic association with Azolla is– **Anabaena**

8.7 Miscellaneous

- The residue left after methane production from cattle dung is– **Used as manure**
- The vitamin whose content increases the conversion of milk into curd by lactic acid bacteria is–**Vitamin-B_{12}**
- Waste water treatment generates a large quantity of sludge, can be treated by– **Anaerobic digesters**
- Methanogenic bacteria are found in– **Rumen of cattle**
- Biogas is the mixture of gases produced by the microbial activity. The type of the gas produced depends upon the – **Type of microbes, Type of organic substrate/waste**
- The primary treatment of sewage involves– **Sedimentation and Filtration**
- The primary treatment of waste water involves the removal of– **Stable particles**
- BOD of waste water is estimated by measuring the amount of– **Oxygen consumption**
- The free-living fungus Trichoderma can be used for– **Biological control of plant diseases**
- Nitrogen-fixing organism is not a– **Pseudomonas**
- Activated sludge should have the ability to settle quickly so that it can– **Be rapidly pumped back from sedimentation tank to aeration tank**
- LAB stands for– **Lactic acid bacteria**
- Responsible for the production of an immunosuppressive molecule cyclosporin A, Microorganism is– **Trichoderma polysporum**
- ….. Put into Anaerobic sludge digester for further sewage treatment– **Activated sludge**
- Secondary metabolites such as nicotine, strychnine and caffeine are produced by plants for their– **Defence action**
- For the commercial and industrial production of Citric Acid, microbes is used– **Aspergillus niger**
- Can be used as a biocontrol agent in the treatment of plant disease– **Trichoderma**
- Commercial blood cholesterol lowering agent is– **Statin**
- Conversion of milk to curd improves its nutritional value by increasing the amount of– **Vitamin B_{12}**

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EXAM POINT

Microbes as in Household Products		
Streptococcus is responsible for–	**Conversion of milk into curd**	**Rajasthan PMT-1996**
Probiotics are–	**Live microbial food supplements**	**DUMET-2010 / AIPMT-2007**
Lactobacillus mediated conversion of milk to curd results because of–	**Coagulation and partial digestion of milk proteins**	**DUMET-2010**
A microbial mutant requiring growth factor in addition to minimal medium is–	**Auxotroph**	**HP CET-2011**
Lactic Acid Bacteria (LAB) grow in milk and convert it to curd and improve its nutritional quality by increasing–	**Vitamin – B_{12}**	**JCECE-2018, AMU-2012**
The fermented food of Mucor are–	**Furu, meju, murcha, sufu**	**CG PMT-2010**
Cheese and yogurt are the products of–	**Fermentation**	**MGIMS Wardha-2003**
The combination of microbes that is responsible for the formation and flavour of yogurt–	**Lactobacillus bulgaricus and Streptococcus thermophilus**	**Manipal-2006**
Lactic acid formation is a two step anaerobic process. Both steps are carried at one stage by–	**Lactobacillus**	**Manipal-2006**
The bacteria that converts milk to curd is–	**Lactic Acid Bacteria (LAB)**	**AP EAMCET-12.07.2022 Shift-II**
Microbes as in Industrial Products		
Roquefort cheese is ripened by–	**Fungi (Penicillium roquefortii)**	**Karnataka CET-20.05.2023**
Commercial broiler strains used in India are–	**Cornish crosses, Hubbard**	**AP EAPCET-11.05.2023, Shift-I**
Beer has an alcoholic content of–	**3-6%**	**AMU-2015**
The principle agent of alcoholic fermentation and bread making is–	**Saccharomyces cerevisiae**	**BVP-2010**
The microbes that is used for commercial production of ethanol is–	**Saccharomyces cerevisiae**	**DUMET-2010**
The large hole in 'Swiss - Cheese' are made by a–	**Propioni Bacterium producing a large amount of CO_2**	**Karnataka CET-2022**
The source of intoxicating beverage called sake is–	**Oryza sativa**	**BCECE-2010, AP EAMCET-2007**
Brewer's yeast lack which of these–	**Diastase and amylase**	**AMU-2011**
The enzyme used in the beverage industry to flavour soft drinks and in the baking industry to sweeten the biscuits and cakes is–	**Glucoamylase**	**AMU -2000**
The activity of bacteria that is very helpful in the preparation and flavouring of tea leaves is known as–	**Bacillus megaterium**	**CG PMT-2007**
Surgical instruments are boiled in water before use because–	**For killing the pathogens present on them**	**CG PMT-2007**
For retting of jute the fermenting microbe used is–	**Butyric acid bacteria**	**AMU-2007**
Petroleum can be replaced by–	**Ethanol**	**Haryana PMT-2002**
Fermentation of sugar to yield alcohol is carried out by–	**Yeast**	**CMC Ludhiana-2010, Haryana PMT-2002**
Vinegar is prepared from alcohol with the help of–	**Acetobacter**	**Haryana PMT-2002**

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Pasteurization is a process means heating of drinks at– **60°-70°C for 30 minutes**	**AMU-2006 / Rajasthan PMT-2009**
To speed up the making process in brewing industry, the growth hormone used is– **Gibberellic acid**	**AMU-2012**
Ethyl alcohol is commercially manufactured from– **Sugarcane**	**BHU PMT(Screening)-2008 / Manipal-2008, BVP-2007 / BHU PMT-2004**
Industrial production of ethanol from starch is brought about by a certain species of– **Oenococcus oeni**	**Assam CEE-2014 / Haryana PMT-2010, AMU-2008 / VMMC-2008 / BVP-2006**
Malolactic fermentation during wine production is performed by– **Lactobacillus**	**CG PMT-2010**
For the commercial and industrial production of citric acid, the microbes that is used **Aspergillus niger**	**NEET-2020 Phase-II**
During the formation of bread it becomes porous due to release of CO_2 by the action of– **Yeast**	**AIPMT-2002**
Dough kept overnight in warm weather becomes soft and spongy because of– **Fermentation**	**AIPMT-2004**
A good producer of citric acid is– **Aspergillus**	**NEET-2013 / DUMET-2006 / Haryana PMT-2003, BVP-2001 / AIPMET-1995**
Idlies become puffy because– **Bubbles of CO_2 trapped in glutein**	**MHT CET-2019**
The process of making the milk bacterialess is called– **Pasteurization**	**Rajasthan PMT-1996**
Microbes as Antibiotics	
Alexander Fleming in 1928 discovered– **Penicillin**	**JCECE-2005 / Manipal-2000, Punjab MET-2004 / AIIMS-2000**
Highest number of antibiotics are produced by– **Streptomyces**	**CMC VELLORE-2013 / BHU PMT (Screening)-2009, Uttarakhand PMT-2009 / VMMC-2009 / BVP-2009**
A chemical substance produced by a microorganism for inhibiting the growth of another is– **Antibiotic**	**BCECE-2014**
…… antibiotic act on the cell wall of bacteria– **β-lactum group**	**Manipal-2013**
The antibiotic terramycin is obtained from– **Streptomyces rimosus**	**Haryana PMT-1999**
Broad spectrum antibiotic are– **Acts on a variety of pathogenic micro organisms**	**VMMC-2005 / AMU-2004 / BVP-2003**
The antibiotic penicillin has inhibitory effect through– **Dissolution of cell wall synthesis**	**VMMC-2010**
The population interactions is widely used in medical science for the production of antibiotics– **Amensalism**	**NEET-2018**
The term "antibiotic" was coined by– **Selman Waksman**	**AIPMT-2003 / BVP-2007**
The ways bacteria become resistant to antibiotic except– **Moving away from the drug**	**AIIMS-2009**
Chloromycetin is obtained from– **Streptomyces venezualae**	**AIIMS-2001**
The microbe which is opted for narrow spectrum insecticide is– **Nucleo polyhedro virus**	**AP EAMCET-24.09.2020 Shift-I**

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Microbes as Chemicals, Enzymes and other Bioactive Molecules	
Aspergillus niger produces– **Citric acid and gluconic acid**	**VMMC-2013**
Lemon is sour due to the presence of– **Citric acid**	**Manipal-2012**
Vitamin-C was first vitamin to be produced by Fementation process using– **Acetobactor**	**Manipal-2012**
The microbial product that is often referred to as a "clot buster" is– **Streptokinase**	**KVPY SB & SX-2019**
The end products of fermentation are– **Ethyl alcohol and CO_2**	**AFMC-2002**
The chemical produced by the host plant to protect themselves against fungal infection is– **Phytoalexin**	**JCECE-2005**
Citric acid is produced by fermentation of cane molasses (sucrose) by– **Aspergillus niger**	**Punjab MET-2010 / AMU-1998**
Streptomycin is obtained from– **Streptomyces griseus**	**VMMC-2012 / BCECE-2010, Rajasthan PMT-2008 / CG PMT-2008, BHU PMT(Screening)-2006 / UP CPMT-2008, 2004, AIIMS-1998**
An immunosuppressive agent produced by a microbe– **Cyclosporin A**	**JCECE-2018**
Cyclosporine is used as– **Immuno suppressant**	**CMC Vellore-2014**
The triggers that activation of protoxin to active Bt toxin of Bacillus thuringiensis in boll worm is– **Alkaline pH of gut**	**NEET-2019**
The preparation and flavoring of leaves of tea and tobacco is due to the activities of– **Bacillus megatherium**	**AIIMS-2017**
The bacteria *Pseudomonas* is useful because of its ability to– **Plant growth promotion and pathogenicity control**	**AIIMS-2004**
Statins produced by this Yeast have been commercialized as Blood-Cholesterol lowering agents– **Monascus purpureus**	**AP EAMCET-11.07.2022 Shift-II**
A commercial blood cholesterol lowering agent is– **Statin**	**NEET-2019**
Microbes play a role in Sewage Treatment	
Sewage water turns black due to action of– **H_2S**	**BCECE-2011**
The high amount of E. coli in water is an indicator of– **Sewage pollution**	**Uttarakhand PMT-2007**
The sediments in the settling tanks of tertiary treatment in STP called– **Activated sludge**	**MHT CET 5.10.2020 Shift-I**
Foul smell in the water bodies of tanks, ponds etc. is due to– **Anaerobiosis**	**Manipal-2004**
The biodegradable pollutant is– **Sewage**	**JCECE-2005**
In domestic sewage impurities in the form of suspended solid, colloidal material and dissolved materials, are about– **0.1 %**	**AMU-2012**
A sewage treatment process in which a part of decomposer bacteria present in the waste is recycled into the starting of the process is called– **Activated sludge treatment**	**DUMET-2009**
The gases are produced in anaerobic sludge digesters is– **Methane, Hydrogen Sulphide and CO_2**	**AIPMT-2014**
In sewage treatment, secondary treatment is considered highly significant. because– **It reduces the BOD level of sewage**	**Karnataka CET-2020**
Sewage water can be purified by– **Microorganisms**	**AP EAMCET-06.09.2021 Shift-I**

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The bacterium that is commonly found in the anaerobic sludge during sewage treatment is called– **Methanobacterium**	**TS EAMCET-02.05.2018 Shift-II**
The primary treatment of sewage water involves– **Filtration and sedimentation**	**Karnataka CET-2016**
Stirred-tank bioreactors have been designed for – **Availability of oxygen throughout the process**	**AIPMT (Screening)-2010**

Microbes in Production of Biogas

By anaerobic process, the cow dung is used to produce– **Methane**	**MGIMS Wardha-2005**
Bio-gas contains– **CH_4, CO_2, H_2**	**Haryana PMT-2002**
Gobar gas contains mainly– **$CH_4 + CO_2$**	**AMU-2006**
Bio gas production from waste bio mass with the help of methanogenic bacteria is– **Three step process (Solubulization , acidogenesis, methanogensis)**	**Haryana PMT-2003**
The equipments that is essentially required for growing microbes on a large scale, for industrial production of enzymes is– **Bioreactor**	**NEET-2019**
Pollution from animal excreta and organic waste from kitchen can be most profitably minimized by– **Using them for producing biogas**	**AIIMS-2006**
Besides dung, the weed that can be used in biogas production is– **Eichhornia crassipes**	**JIPMER-2014**
The primitive prokaryotes responsible for the production of biogas from the dung of ruminant animals, include the– **Methanogens**	**NEET-2016 Phase-I**

Microbes Work as Biocontrol Agents

A fungicide is– **Bordeaux mixture**	**VMMC-2011**
Scirpophaga incertulus is an example of– **Monophagus pest**	**WB JEE-2009**
Tiger beetle is used as – **Biological insecticide**	**WB JEE-2010**
In plant disease control, the latest trend is– **Biological control**	**Punjab MET-1999**
Bacillus thuringiensis is used to control– **Insect pests**	**DUMET-2010**
Dragonflies play an important role because they– **Feed entirely on mosquito adults and mosquito larva**	**JIPMER-1999**
The microbial biocontrol agent for butterfly caterpillar is– **Bacillus thuringiensis**	**Kerala PMT-2015**
When a natural predator (living being) is applied on the other pathogen organism to control them, this process is called– **Biological control**	**JIPMER-2003**
Trichoderma harzianum has proved a useful microorganism for– **Biological control of soil-borne plant pathogens**	**Rajasthan PMT-2010, AIPMT-2008**
…….. the microbes are commonly employed in dairy industry– **Lactobacillus, Streptomyces, Penicillium**	**MHT CET-07.10.2020 Shift-I**
A common biocontrol agent for the control of plant diseases is– **Trichoderma**	**Rajasthan PMT-2011**
…….. can be used as a biocontrol agent in the treatment of plant disease– **Trichoderma**	**NEET-2019**
A biocontrol agent to be a part of an integrated pest management should be– **Species-specific and inactive on non-target organisms**	**NEET (Odisha)-2019**
The first bioherbicide developed in 1981 was based on– **Phytophthora palmivora**	**AIIMS-2009**
The proved effective for biological control of nematodal disease in plants is– **Paecilomyces lilacinus**	**AIPMT-2008**
Excellent biocontrol agents to treat ecologically sensitive areas is– **Nucleopolyhedrovirus**	**AP EAMCET-25.04.2018 Shift-II**

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The bio-engineered bacteria that is utilized for cleaning of marine oil slicks is– **Pseudomonas putida**	**JIPMER-2012 / AP EAMCET-2011**
…… can be controlled by using biopesticides– **Insects, Diseases, Weeds**	**JIPMER-2012**
To control the stored grain pests the better and safe method is– **The biological control of pests**	**AMU-1998**
Microbes work as a Biofertilizer	
A gas produced by paddy fields and connected with global warming is– **Methane**	**J&K CET-2008**
Some blue-green algae can be used as biofertilizer because– **They can fix nitrogen**	**Karnataka CET-2002**
Biofertilizers are– **Anabaena and Azolla**	**HP CET-2013 / VMMC-2003 / AIPMT-1997**
Symbiotic bacteria is– **Rhizobium**	**Manipal-2000**
Root nodules for nitrogen fixation in non leguminous trees are produced by species of the genus– **Frankia**	**CG PMT-2007**
Bio-fertilizers include– **Nitrogen fixing cyanobacteria, Nitrogen bacteria, fixing Cyanobacteria, bacteria and mycorrhizal fungi**	**Haryana PMT-2002 / J&K CET-2002**
VAM is– **Endo-mycorrhiza**	**Haryana PMT-2002**
Mycorrhiza is a symbiotic association between– **Fungi and roots of higher plants**	**Haryana PMT-2007 / Haryana PMT-2002**
Rhizobium is found in the roots of – **Legumes**	**Haryana PMT-2002**
A green manure is– **Sesbania**	**Haryana PMT-2002**
Green manure is used as– **Crotalaria juncea**	**Haryana PMT-2005**
BGA (blue-green algae) is chiefly used as biofertilizer in the crop of– **Paddy**	**Haryana PMT-1999**
Nostoc is known to perform– **Photosynthesis and nitrogen fixation simultaneously**	**CG PMT-2006**
The organism that used as a biofertilizer is free living and never shows symbiosis is– **Azotobacter**	**MHT CET-07.10.2020 Shift-I**
Bacillus thuringiensis is a soil bacterium that produces a _____ with insecticidal properties– **Protein**	**MHT CET-07.10.2020 Shift-I**
Azolla is used as bio-fertilizer as it has– **Cyanobacteria**	**Haryana PMT-2003**
VAM is useful for– **Phosphate nutrition**	**Haryana PMT-2003**
Mycorrhizal association of which plant enables it to utilize amino acid as N – source is– **Pinus**	**CG PMT-2010**
Rhizobia form nodule in Glycine max (Soybean) is– **Bradyrhizobium**	**CG PMT-2010**
The most efficient free nitrogen fixer cyanobacterium in field of rice is– **Aulosira**	**BVP-2013**
Nodules with nitrogen -fixing bacteria are found in– **Gram**	**MGIMS Wardha-2010**
Natural silk contains is– **Nitrogen**	**CG PMT-2011**
Lowest number of chromosomes are found in– **Brachyscome,Haplopappus**	**Rajasthan PMT-2004**
Fuel wood required per person per day is– **3 kg**	**Haryana PMT-2002**
Gasohol contains– **10 – 15% alcohol**	**Haryana PMT-2002**
A scrubber in the exhaust of a chemical industrial plant removes– **Gases like sulphur dioxide**	**AIPMT-2014**
During Lactic acid fermentation– **Neither O_2 is used, nor CO_2 is liberated**	**Karnataka CET-2010**
The principle upon which a lactometer works is– **Density**	**KVPY (SA)-2011**

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09.

BIOTECHNOLOGY : PRINCIPLES AND PROCESSES

9.1 Principles of Biotechnology

- ..... should be chosen for best yield if one were to produce a recombinant protein in large amounts– **A continuous culture system**
- The most important feature in a plasmid to be used as a vector is– **Origin of replication (ori)**
- An antibiotic resistance gene in a vector usually helps in the selection of– **Transformed cells**
- The controlled use of biological agents, such as microorganisms, plant or animal cells, for beneficial use to humans is called– **Biotechnology**
- Gene cloning, Synthesis of a gene, Correcting a defective gene, Developing a DNA vaccine the techniques can be included under– **Biotechnology**
- The core techniques of modern biotechnology is/are– **Genetic engineering, Bioprocess engineering**
- The term 'recombinant DNA' refers to– **DNA with a piece of foreign DNA**
- Plasmid used to construct the first recombinant DNA was isolated from ..... bacterium species– **Salmonella typhimurium**
- We can cut DNA at specific sites by restriction endonucleases is possible– **Genetic engineering.**
- The term 'chemical knife' refers to– **Endonucleases**
- In recombinant DNA technology, the term vector refers to– **A plasmid used to transfer DNA into a living cell**
- One of the key factors, which makes the plasmid the vector in genetic engineering is– **Its ability to carry a foreign gene**
- First recombinant DNA was made using– **Plasmid for antibiotic resistant gene for Salmonella**
- Genetic engineering and bioprocess engineering are - **Principles of Biotechnology**
- In EcoRI 'R' stands for– **Strain RY13**
- DNA fragments are– **Negative charged**
- The DNA fragments movement on agarose gel. The smaller the fragment size, the farther it move is known as- **Gel electrophoresis**
- Restriction endonculease purified from bacteria can be used in vitro is possible - **Genetic engineering**
- Advancement in genetic engineering has been possible due to– **Endonucleases**
- Cleaving DNA segments with endonuclease and rejoining them with ligase construction of - **Recombinant DNA**
- Nobel Prize of 1978 for restriction endonuclease technology was given to–**Arber, Nathans and Smith**
- Vector must be present to make it autonomously replicate in host cell– **Ori site**
- The restriction enzyme Hind II isolated from bacterium– **Haemophilus influenzae**
- Gave the definition of biotechnology– **European federation of biotechnology**
- ..... techniques has given the birth of biotechnology– **Genetic engineering, Maintenance of sterile ambience**
- First recombinant DNA was developed– **1972**
- Structure is involved in genetic engineering– **Plasmid**
- Genetic engineering aims at–**Destroying wild gene, Replacing defective gene, Curing human disease by introducing new gene**
- The procedure through a piece of DNA is introduced in a host bacterium is called– **Transformation**
- EFB stands for– **European Federation of Biotechnology**
- Extrachromosomal, self-replicating double stranded circular DNA in bacterial cell is called– **Plasmid**
- Biotechnology is not related to– **Transfer of a gene from parent to offspring**
- Sexual reproduction results in– **Introduction of many undersirable variation along with desirable variations.**
- Genetic engineering has been made possible due to– **Availability of restriction endonucleases in purified form**
- Growth of desired organism in biotechnology results in– **Genetic engineering, Use of restriction enzyme, Maintenance of sterile ambience**

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- Technique result in introduction of one or more desired gene only into the specific host – **Tissue culture**
- Modern biotechnology is based on– **Genetic engineering**

9.2 Tools of Recombinant DNA Technology

- A gene whose expression helps to identify transformed cell is known as– **Selectable marker**
- During the purification process for recombinant DNA technology, addition of chilled ethanol precipitates out– **DNA**
- The Nobel Prize for the development of PCR technique was awarded by– **Kary Mullis**
- The techniques that made it possible to genetically engineer living organisms– **Recombinant DNA techniques**
- The equipments that is essentially required for growing microbes on a large scale, for industrial production of enzymes– **Bioreactor**
- DNA strands on a gel stained with ethidium bromide when viewed under UV radiation, appear as– **Bright orange bands**
- The DNA fragments separated on an agarose gel can be visualised after staining with– **Ethidium bromide**
- Formation of phosphodiester bond between two DNA fragments construction of recombinant DNA molecule is– **The role of DNA ligase**
- The steps that are catalysed by Taq polymerase in a PCR reaction– **Extension of primer end on the template DNA**
- In agarose gel electrophoresis, DNA molecules are separated on the basis of their– **Size only**
- Rising of dough is due to– **Production of CO_2**
- The first restriction endonuclease isolated was– **Hind II**
- The source of the restriction enzyme EcoR I is– **Escherichia coli RY 13**
- The sticky ends of a fragmented DNA molecule are made of– **Unpaired bases**
- If a plasmid vector is digested with EcoR I at a single site, then– **Two sticky ends will be produced**
- In recombinant DNA technology, a plasmid vector is cleaved by– **The same enzyme that cleaves the donor DNA**
- Technique of separation of DNA fragments through the pores of agarose gel under the influence of electric field is known as – **Gel electrophoresis.**
- Having become an expert on gel electrophoresis, you are asked to examine a gel. Where would you find the smallest segments of DNA– **Near the positive electrode, farthest away from the wells.**
- The steps that should be performed by a person in order to visualise the bands of DNA fragments obtained from gel electrophoresis Staining with ethidium bromide followed by – **Exposure to UV radiations**
- Separation of DNA fragments according to their size is used for– **Gel electrophoresis**
- If we want to recover many copies of the target DNA, we will choose a vector– **Whose origin supports high copy number**
- The effect that if pBR322, a cloning vector does not carry 'ori' site– **Replication will not take place**
- Cloning vector is– **pBR 322**
- The gene 'rop' present in pBR322 cloning vector, codes for–**The proteins involved in the replication of the plasmid**
- A recombinant DNA is inserted within the coding sequence of enzyme β-galactosidase, resulting in inactivation of the enzyme– **Insertion inactivation**
- The bacteria that is used as a vector for plant genetic engineering– **Agrobacterium tumefaciens**
- The microbes transform normal plant and animal cells to cancerous cells respectively– **Agrobacterium tumefaciens and retroviruses**
- Increasing the efficiency with which DNA enters the bacterium through pores in its cell wall refers to– **Competent**
- Required for gene gun method of gene transfer is– **Microparticles**
- Inject recombinant DNA into the nucleus of an animal cell is a method used to– **Micro-injection**
- In biolistic method of gene transfer, the micro-particles coated with foreign DNA are bombarded into target cells at a very high velocity. These micro-particles are made up of– **Gold or tungsten**
- Autoradiography technique is used in- **Photographic film**
- ELISA is based on the principle– **Antigen-antibody interaction**
- Ethidium bromide can be used to visualize the DNA- **In agarose gel electrophoresis**
- DNA staining dye used in elctrophoresis is– **Ethidium Bromide**
- Popularised the ____ Avaliability of thermostable DNA polymerase - **PCR (Polymerase chain Reactions)**

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- The polymerase chain reaction (PCR) is a powerful technique to– **Amplify genes**
- Primers get attached with DNA strands in– **Annealing step of PCR**
- Agarose extracted from sea weeds finds use in– **Gel electrophoresis, DNA fingerprinting**
- In gel electrophoresis, the separated bands of DNA are cut out and extracted from the gel piece, step is called– **Elution**
- Heat is applied in PCR– **Denaturation**
- Enzyme joins sticky ends of DNA– **DNA ligase**
- Specific region or sequence of DNA is responsible for initiating replication– **Origin of replication**
- Vector can clone only a small fragment of DNA– **Plasmid**
- Plasmids are used as vectors in genetic engineering because of their– **Ability to carry foreign genes**
- Biolistic technique is used in– **Gene transfer process**
- Types of bonding facilitates the action of DNA ligases– **Hydrogen bonding**
- Electrophoresis is used to separate molecule– **DNA, RNA, Protein**
- Most common matrix used in gel - electrophoresis– **Agarose**
- DNA fragments separate according to size through– **Sieving effect**
- Visualize DNA fragment help to– **Ethidium bromide, Exposure to UV radiation**
- ..... proteins involved in replication of plasmid– **Rop**
- If the r-plasmid does not have an insert, it will give colonies of colour is– **Blue colour**
- A restriction endonuclease breaks bond between– **Sugar & phosphate components of a nucleic acid molecule**
- ..... is not cloning vector- **Sal I**
- In pBR 322, tetracycline resistance gene (tet^r) has recognition site for endonuclease– **BamH I**
- ..... is not a tool of genetic engineering– **GMO**
- Enzyme will get inactivated in insertional inactivation– **β-galactosidase**
- Palindromic DNA sequence for EcoRI is– **3' - CTTAAG - 5'**
- Minimum number of plasmids in a bacteria can be– **1 - 2**
- pBR322 has two antibiotic resistance genes. These are against– **Ampicillin and Tetracycline**
- Genetic engineering would not have been possible if one of these were absent– **DNA ligase**
- Restriction enzyme cut the palindromic DNA sequences– **At little away from centre and between the same bases on opposite strands**
- The 'sticky' ends of a fragmented DNA molecule are made of– **Unpaired bases**
- In pBR322, BamH1 site is located in– **Tetracycline resistance gene**
- Ideally in a process of genetically modifying an organism a vector should have– **Recognition site**
- First restriction endonuclease is– **Hind - II**
- While naming the restricting enzyme, 2^{nd} word is– **Species name**
- The virus have ability to transform normal cells to cancerous cell– **Retrovirus**
- Restriction endonucleases are the most widely used in recombinant DNA technology. They are obtained from– **Bacterial cells**
- DNA sequence of base pairs that reads same on the two strands when orientation of reading is kept the same is– **Palindrome sequence**
- In presence of chromogenic substrate, recombinant bacteria will give– **Colourless colonies**
- The substrate for restriction enzyme is– **Double stranded DNA**
- Biolistics (gen-gun) is suitable for– **Transformation of plant cells**
- For a DNA to function as a cloning vector the most essential requirement is– **Ori sequence**
- For transformation, micro-particles coated with DNA to be bombarded with gene gun are made up of– **Gold or Tungsten**
- DNA cannot pass through a cell membrane as– **It is hydrophilic molecule**
- Recombinant DNA bearing ampicillin resistance gene is passed in E.coli. The latter are spread on agar plates containing ampicillin. Then– **Transformed recipient cells grow and untransformed cells die**
- After incubation of bacterial cells with recombinant DNA on ice, heat shock is given in, the bacterial cells are exposed to a temperature of– **42^0C**
- The criterion for DNA fragments movement on agarose gel during gel electrophoresis is– **The smaller the fragment size, the farther it moves**

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- In r-DNA technology or genetic engineering elution means– **The separated band of DNA are cut from the gel and extracted from the gel piece**

9.3 Processes of Recombinant DNA Technology

- The genetically-modified (GM) brinjal in India has been developed for– **Insect-resistance**
- The commonly used as a vector for introducing a DNA fragment in human lymphocytes is– **Retrovirus**
- In RNAi, genes are silenced using– **dsRNA**
- Silencing of a gene could be achieved through the use of– **Both RNAi and antisense RNA**
- A probe which is a molecule used to locate specific sequences in a mixture to DNA or RNA molecules could be– **Either RNA or DNA**
- A foreign DNA and plasmid cut by the same restriction endonuclease can be joined to form a recombinant plasmid using– **Ligase**
- The feature of the plasmids is not a– **Single-stranded**
- The cutting of DNA at specific locations became possible with the discovery of–**Restriction enzymes**
- The organism is used to transfer T-DNA– **Agrobacterium tumefaciens**
- The enzyme used to join the fragments of DNA during the process of replication is– **DNA ligase**
- The vector that can clone only a small fragment of DNA– **Plasmid**
- Significance of 'heat shock' method in bacterial transformation is to facilitate– **Uptake of DNA through transient pores in the bacterial cell wall**
- An enzyme catalysing the removal of nucleotides from the ends of DNA is– **Exonuclease**
- The transfer of genetic material from one bacterium to another through the mediation of a vector like virus is termed as– **Transduction**
- 'Restriction' in restriction enzyme refers to– **Cutting of DNA at specific position only**
- In the isolation of DNA, removal of protein and RNA is carried out by enzymes ..... and ..... respectively– **Protease, ribonuclease**
- During isolation of genetic material, the chemical used to precipitate out the purified DNA is– **Chilled ethanol**
- Process used for amplification or multiplication of DNA in DNA fingerprinting is– **Polymerase chain reaction**
- The polymerase chain reaction is a technique used for– **Amplification of DNA**
- Chemically synthesised oligonucleotides that are complementary to the regions of DNA are– **Primers**
- Enzyme 'Taq polymerase' used in PCR, has been isolated from bacterium– **Thermus aquaticus**
- The required to perform polymerase chain reaction is– **Primers, Taq DNA polymerase**
- DNA polymerase used in PCR– **It remains active at high temperature**
- Used to transfer the recombinant DNA into the host is– **Bioreactors**
- A device in which large volume of living cells are cultured in order to get a specific product is called– **Bioreactor**
- Stirred tank bioreactor have been designed for– **Availability of oxygen throughout the process**
- After completion of the biosynthetic stage in the bioreactors, the product undergoes separation and purification processes, collectively termed as– **Downstream processing**
- At which stage after fermentation, its desired product is screened and purified– **Downstream processing**
- There is a restriction endonuclease called EcoRI, 'co' stands for– **Coli**
- Restriction endonuclease-Hind II always cuts DNA molecules at a particular point by recognizing specific sequence of– **Six base pairs**
- Restriction enzymes belong to a large class of the enzyme called– **Nucleases**
- Using recombinant technology, genes from a donor cell can be transplanted into a bacterium for DNA replication and protein synthesis. The kinds of cells that can be used as a donor in this technology are– **Any kind of cells**
- The first restriction endonuclease– **Hind II**
- _____ enzyme is used to degrade cell wall of plants– **Cellulase**
- The palindromes are groups of letters that form the _____ when read in both direction forward and backward– **Same words**
- First step in genetic engineering is– **Isolation of genetic material**
- _____ discovered recombinant DNA (rDNA) technology– **Stanley Cohen and Herber Boyer**
- Utilization of living organisms/systems/processes for producing materials useful to human society is known as– **Biotechnology**
- Any protein encoding gene is expressed in a heterologus host, it is called– **Recombinant protein**

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- A procedure through which a piece of DNA is introduced in a host bacterium– **Transformation**
- Additional or removal of gene is - **Genetic engineering**
- Thermostable enzyme– **Taq polymerase**
- DNA polymerase (Taq) and deoxynucleotides are added (works) during the PCR– **Before extension**
- In convention for naming restriction endonuclease, second two letter com from species of the ____ from which they were isolated - **Prokaryotic cell**
- To isolated plasmid from a yeast cell, this purpose we used _____ enzyme in initial step– **Chitinase**
- To isolate DNA, bacterial cell is treated by– **Lysozyme**
- Process used for amplification or multiplication of DNA in– **PCR**
- Stirred - tank bioreactors have advantages over shake flasks because they– **Provide better aeration & mixing properties**
- Isolation of the genetic material in pure form, free from other macromolecules can be achieved by treating the bacterial cells/plant or animal tissues with enzymes except– **Ligase** **Chilled ethanol**
- Component of a stirring tank bioreactor is meant for mixing the oxygen with the contents– **Agitator system**
- Appropriate techniques have been developed for large scale cell culture using bioreactors for producing– **Vaccines, Hormones, Foreign gene product**
- Taq polymerase enzyme is a– **DNA polymerase obtained from a bacterium**
- Most important enzyme in Polymerase Chain Reaction (PCR) is– **DNA polymerase**
- The properties of a good vector– **It should be able to replicate autonomously**
- Competent host in recombinant DNA technology is– **The cell ready to uptake alien DNA**
- Two bacteria found to be very useful in genetic engineering experiments– **Escherichia and Agrobacterium**
- In the process of recombinant DNA technology, the isolated foreign DNA is inserted into another DNA molecule known as– **Closing vector**
- A foreign DNA precipitated on the surface of tungsten or gold particles and shot into the target cells is known as– **Biolistic method**
- A method of gene transfer in animals– **Microinjection**
- In recombinant DNA technology, a plasmid vector must be cleaved by– **The same enzyme that cleaves the donor genes**
- Stirred-tank bioreactors designed for– **Availability of oxygen throughout the process**
- Large scale production of biotechnological products involves use of– **Bioreactor/fermenter**
- Bolivar and rodriguez the scientists who synthesized the plasmid- **Plasmid pBR322**
- In a plasmid vector, any restriction endonuclease site should be preferably– **Only one**
- The introduction of T- DNA into plant involves infection of the plant by- **Agrobacterium tumefaciens**
- The colonies of recombinant bacteria appear white in contrast to blue colonies of non- recombinant bacteria because of insertion inactivation of _____ in recombinant bacteria. **β- galactosidase**
- First artificial cloning vector– **pBR322**

9.4 Miscellaneous

- 'Restriction' in restriction enzyme refers to– **Prevention of the multiplication of bacteriophage by the host bacteria**
- Isolating DNA from bacteria, enzymes is not used– **Deoxyribonuclease**
- Contributed in popularising the PCR (Polymerase Chain Reaction)– **Availability of 'Thermostable' DNA polymerase**
- An antibiotic resistance gene in a vector usually helps in the selection of– **Transformed bacterial cells**
- Significance of 'heat shock' method in bacterial transformation is to facilitate– **Uptake of DNA through transient pores in the bacterial cell wall**
- The role of DNA ligase in the construction of a recombinant DNA molecule is– **Formation of phosphodiester bond between two DNA fragments**
- During the purification process for recombinant DNA technology, addition of chilled ethanol precipitates out– **DNA**
- The sequence that controls the copy number of the linked DNA in the vector, is termed– **Ori site**
- In a mixture, DNA fragments are separated by– **Electrophoresis**
- In recombinant DNA technology antibiotics are used– **As selectable markers**
- Spooling is– **Collection of isolated DNA**
- The correct order of steps in Polymerase Chain Reaction (PCR) is– **Denaturation, Annealing, Extension**

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EXAM POINT

What is Biotechnology?	
Bioinformatics is an interdisciplinary branch which is concerned with the application of– **Information science in analysing the biological data**	**Karnataka CET-2006**
Product of biotechnology is– **Transgenic crops (GM crops), Humulin, Biofertilizer**	**JIPMER-2012**
Genetic engineering involves– **Use of restriction endonuclease on bacterial DNA and formation of new traits**	**AIPMT-1998**
In India, the organization responsible for assessing the safety of introducing genetically modified organisms for public use is– **Genetic Engineering Appraisal Committee (GEAC)**	**NEET-2018**
Principles of Biotechnology	
Cloning is meant for– **To preserve the genotype of organism**	**AMU-2011**
Plasmids are ideal vectors for gene cloning as they– **are self-replicating**	**CG PMT-2007**
Extra nuclear genes occur in– **Mitochondria and inherited by female**	**CG PMT-2007**
Useful in identifying the different strains of a causal microbe of an infectious disease is– **Complementary DNA**	**AP EAMCET-2003**
Extra,Circular double helical DNA molecule is a– **Plasmid**	**AP EAMCET-2001**
Production of a human protein in bacteria by genetic engineering is possible because– **The genetic code is universal**	**CG PMT-2006**
Genetic recombination by transduction in bacteria was discovered first in this– **Salmonella typhimurium**	**AP EAMCET-2002**
The vector suitable to clone long fragments of DNA as– **Cosmids**	**AP EAMCET-2002**
The first live healthy cloned mammal of the world was– **Dolly sheep**	**CMC Vellore-2007**
A technique which involves deliberate manipulation of genes within or between species– **Genetic engineering**	**J&K CET-2007**
Produced by genetically engineered bacteria is– **Insulin**	**AFMC-2010**
The two microbes found to be very useful in genetic engineering are– **Escherichia coli and Agrobacterium tumefaciens**	**CMC Ludhiana-2015 / JCECE-2013, AIPMT-2006 / VMMC-2002**
Manipulation of DNA in genetic engineering become easy due to the invention of– **Polymerase chain reaction**	**Manipal-2006**
Genetic Map is one that– **Establishes sites of the genes on a chromosome**	**AIPMT-2003**
Eugenics is the branch concerned with– **Improving the quality of human populations by the application of genetic principles**	**AIIMS-2009**
Scientists make an animal superior by view of genotype, introducing some foreign genes in its called– **Genetic engineering**	**AIPMT-1996**
The organelles that is related with genetic engineering is– **Plasmids**	**AIPMT-1994**
Ti plasmid is obtained from– **Agrobacterium**	**AP EAMCET-24.09.2020 Shift-I**
A technique to alter the chemistry of the genetic material DNA and RNA is– **Genetic engineering**	**AP EAMCET 11.07.2022 Shift-II**
Agarose extracted from sea weeds finds use in– **Gel electrophoresis**	**AIPMT (Screening)-2011**
Tools of Recombinant DNA Technology	
In EcoRI. R and I denote– **Enzyme isolated from strain of bacteria**	**AP EAPCET-23.05.2023, Shift-II GUJCET-2017**
The technique used to detect the antibodies synthesized by host against the pathogen– **ELISA**	**AP EAPCET-11.05.2023, Shift-I**

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Restriction endonucleases are – **Enzymes that recognize a specific DNA sequence**	**AMU-2015 / AIPMT-2004**
Animal is mostly used in genetics experiments– **Fruit fly**	**UP CPMT-2003**
GAATTC is the recognition site for restriction endonuclease– **Eco RI**	**VMMC-2013**
Construction of a recombinant DNA involves– **Cleaving DNA segments with endonuclease and rejoining them with ligase**	**Karnataka CET-2002**
Used in the production of insulin by genetic engineering is– **Eschereria coli**	**UP CPMT-2012 / DUMET-2008**
The linking of antibiotic resistance gene with the plasmid vector became possible with– **DNA ligase**	**JCECE-2018 / BHU PMT (Screening)-2010**
Separation of proteins on the basis of their being polyelectrolytes can be brought about by– **Electrophoresis**	**CG PMT-2007**
Restriction enzyme was discovered by– **A. Warner , H. Smith and Nathans**	**Haryana PMT-2002**
Cultivation of Bt cotton has been much in the news. The prefix Bt means– **Carrying an endotoxin gene from *Bacillus thuringiensis***	**Haryana PMT-2004**
The first step in the Southern blot technique is– **Digestion of DNA by restriction enzyme**	**Haryana PMT-2004**
Various enzymes and hormones can be produced on large scale by employing the recombinant– **DNA technique**	**Haryana PMT-2004, Manipal-2003**
Biolistics (gene-gun) is suitable for– **Transformation of plant cells**	**JCECE-2018**
The plasmid pBR 322 used in biotechnology is– **Cloning vehicle**	**Uttarakhand PMT-2010, AP EAMCET-2002**
Antibiotic which inhibits cell wall synthesis in bacteria– **Penicillin**	**CG PMT-2010**
The enzyme employed for amplification of DNA during PCR is commercially obtained from– **Thermus aquaticus**	**Manipal-2010**
First discovered restriction endonuclease that always cuts DNA molecule at a particular point by recognising a specific sequence of six base pairs is– **Hind II**	**NEET-2020 Phase-II**
The most throughly studied of the known bacteria-plant interactions is the– **Gall formation on certain Angiosperms by *Agrobacterium***	**AIPMT-2004**
Commonly used vectors for human genome sequencing are– **BAC and YAC**	**AIPMT-2014**
The vector that can clone only a small fragment of DNA is– **Plasmid**	**AIPMT-2014**
The two antibiotic resistance genes on vector pBR322 are for– **Ampicillin and Tetracycline**	**NEET (Odisha)-2019**
An enzyme catalysing the removal of nucleotides from ends of DNA is– **Exonuclease**	**NEET (Odisha)-2019**
Commonly used as a vector for introducing a DNA fragment in human lymphocytes is– **Retrovirus**	**NEET-2018**
DNA fragments generated by the restriction endonucleases in a chemical reaction can be separated by– **Electrophoresis**	**NEET-2013**
A gene whose expression helps to identify transformed cell is known as– **Selectable marker**	**NEET-2017**
In gene cloning that are used as vehicles for carrying foreign DNA fragment is– **Vector**	**SRM JEEE -2017**
In E. Coli, during lactose metabolism repressor binds to– **Operator gene**	**AIPMT-2002**
A tumor inducing plasmid widely used in the production of transgenic plants is that of– ***Agrobacterium tumefaciens***	**AIIMS-2005**
In ti-plasmid is removed– **Virulent gene**	**AIIMS-25.05.2019 Shift-II**
Chimeric DNA is– **Recombinant-DNA**	**AIIMS-25.05.2019 Shift-II**
EcoRI is– **A restriction enzyme**	**Karnataka CET-2014**
The enzymes that absolutely necessary for recombinant DNA technology are– **Restriction endonucleases and Ligases**	**Karnataka CET-2012**

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The vector for T–DNA is– ***Agrobacterium tumefaciens***	**JIPMER-2014**
Restriction endonucleases are most widely used in recombinant DNA technology. They are obtained from– **Bacterial cells**	**Karnataka CET-2006**
In cloning vectors, antibiotic resistant genes are helpful for– **Selection of recombinants**	**Karnataka CET-2019**
A giant rat is formed in the laboratory, the reason is– **Gene manipulation**	**AIPMT-2000**
For transformation, micro-particles coated with DNA to be bombarded with gene gun are made up of– **Gold or Tungsten**	**AIPMT (Screening)-2012**
The techniques made it possible to genetically engineer living organisms– **Recombinant DNA techniques**	**AIPMT (Mains)-2011**
During the process of isolation of DNA, chilled ethanol is added to– **Precipitate DNA**	**NEET (Karnataka)-2013**
Genes of interest can be selected from a genomic library by using– **DNA probes**	**NEET (Karnataka)-2013**
There is a restriction endonuclease called EcoRl. "co" part in it stand for– **Coli**	**AIPMT (Screening)-2011**

Method of Recombinant DNA Technology

PCR is used for– **DNA amplification**	**Karnataka CET-20.05.2023**
McClintock is related to– **Transposons**	**HP CET-2011**
An antibiotic resistance gene in a vector usually helps in the selection of– **Transformed cells**	**Karnataka CET-2022**
Annealing' is a phenomenon related to– **Renaturation of DNA**	**CG PMT-2010**
In biotechnology now-a-day a much use technology in biolistic. Identify the method where this technique is used during genetic engineering experiments– **Gene transfer process**	**CMC Ludhiana-2015**
Spooling is– **Collection of isolated DNA**	**NEET-2020 Phase-II**
DNA- dependent RNA polymerase catalyses transcription on one strand of the DNA is called the– **Template strand**	**NEET-2016 Phase-II**
Stirred-tank bioreactors have been designed for– **Availability of oxygen throughout the process**	**NEET-2016 Phase-II**
During the purification process for recombinant DNA technology, addition of chilled ethanol precipitates out– **DNA**	**NEET-2021**
The DNA fragments separated on an agarose gel can be visualised after staining with– **Ethidium bromide**	**NEET-2017**
The antibiotic inhibits interaction between tRNA and mRNA during bacterial protein synthesis– **Neomycin**	**AIPMT-2006**
Recombinant DNA technology involves several steps in which initial step is of isolation of the DNA. Which enzymes are used in the process for the breakdown of fungal cell, plant cell and bacterial cell respectively– **Chitinase, cellulase, lysozyme**	**AIIMS-2010**
Electroporation procedure involves– **Making transient pores in the cell membrane to introduce gene constructs**	**AIIMS-2005**
Now-a-days, the early diagnosis of bacterial or viral infection in humans is possible using– **PCR**	**Karnataka CET-2020**
Biolistics method is suitable for gene transfer into– **Plants cells**	**Karnataka CET-2020**
dsRNA is used to develop pest resistant tobacco plant by a technique called– **RNA interference (RNAi)**	**Karnataka CET-2018**
The equipment that introduces DNA into cells is– **Gene gun**	**SRM JEEE-2019**
Polyethylene glycol method is used for– **Gene transfer without a vector**	**AIPMT-2009**

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10.

BIOTECHNOLOGY AND ITS APPLICATIONS

10.1 Biotechnological Applications in Agriculture

- Protein encoded by gene crylAb controls the infestation of which of the insects– **Corn borer**
- Genetically Modified (GM) crops can be produced by– **Recombinant DNA technology**
- Bacillus thuringiensis forms protein crystals which contain insecticidal protein. This protein– **Binds with epithelial cells of midgut of the insect pest ultimately killing it**
- An improved variety of transgenic basmati rice– **Gives high yield and is rich in vitamin A**
- Salt tolerant transgenic has been developed for– **Tomato**
- Bt cotton variety that was developed by the introduction of toxin gene of Bacillus thuringiensis (Bt) is resistant to– **Insect pests**
- Golden rice is a genetically modified crop plant where the incorporated gene is meant for biosynthesis of– **Vitamin A**
- Study of altered physiology of host is the– **Pathophysiology**
- The trigger for activation of toxin of Bacillus thuringiensis is– **Alkaline pH of gut**
- A transgenic rice having gene for β-carotene is– **Golden rice**
- Bt toxin genes have been expressed in plants in order to provide resistance against– **Coleopterans and dipterans, Lepidopterans**
- Bt toxins are– **Intracellular crystalline proteins**
- Bt toxin protein crystals present in bacterium Bacillus thuringiensis, do not kill the bacteria themselves because– **Toxins occur as inactive protoxins in bacteria**
- The inactive form of Bt toxin (protoxin) to get converted into its active form in the body of an insect– **Alkaline pH of the gut**
- Creating pores in the midgut epithelial cells, leading to cell swelling and lysis– **Bt toxin kills insects**
- The Bt toxin is not toxic to human beings because– **Conversion of pro Bt toxin to Bt toxin takes place in highly alkaline conditions**
- Cryll Ab and cryl Ab produce toxins that control– **Cotton bollworms & corn borer respectively**
- Bt corn has been made resistant from corn borer disease by introduction of the gene– **cryl Ab**
- Some of the characteristics of Bt cotton are– **High yield and resistance to bollworms**
- The process of RNA interference has been used to make tobacco plant resistant to– **Meloidogyne incognitia**
- The nematode that attacks the roots of tobacco plants– **Meloidogyne incognitia**
- Silencing of specific mRNA due to complementary RNA involves– **RNA interference**
- RNA interference method do not include– **Silencing of a specific mRNA due to a complementary ssDNA molecule**
- Meloidogyne incognitia is a– **Nematode**
- Mobile genetic elements also known as– **Transposons**
- The best solution to increase crop production without causing environmental hazard is– **Use of genetically modified crops**
- All are the biotechnological applications in order to increase food production except– **Apiculture**
- Agrochemical based agriculture includes– **Fertilisers and pesticides**
- Biotechnology essentially deals with the industrial scale production of **Biopharmaceuticals, Biologicals**
- It gives high yield and is rich in vitamin A– **Golden rice**
- Bioremediation, waste treatment and energy production are applications of– **Biotechnology**
- A transgenic food crop which may help in solving the problem of night blindness in developing countries is– **Golden rice**

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- Bt toxin gene has been cloned from the bacteria and expressed in plants to provide resistance to insects without the need for insecticides. Examples of such plants are– **Cotton and corn, Rice and potato, Tomato and Soybean**
- First genetically modified plant commercially released in India is– **Bt cotton**
- GM crops can effect human health by causing allergic reactions, Production of GM crops cause damage to the natural environment and is always costly– **Disadvantages of GM crops**
- The agricultural challenges that cannot be solved with transgenic techniques– **Public preference for organic vegetables**
- A transgenic food crop which may help in solving the problem of night blindness in developing countries is– **Golden rice**
- As most Bt toxins are insect group specific, so the choice of Bt genes of depends– **Crop, Targeted pest**
- Bt toxin is obtained from a prokaryote and is– **Intracellular crystalline protein**
- A strain of "golden" rice contains high content of– **Vitamin A**
- The first genetically engineered human insulin (Humulin) which is a protein, was launched on 5th July 1983 by an American company named– **Eli Lilly**
- Silencing of a specific mRNA due to a complementary ds RNA involves- **RNA i**
- In an experiment we want to induce tumor in root of plant, we use– **Agrobacterium tumifaciens**
- Golden rice is also called because grains are yellow coloured due to the presence of large quantity of - **β- Carotene**
- The problem of loss of crop by insects can be overcome by using– **Bt brinjal**
- An estimated _____ varieties of rice in India alone– **200,000**
- Cotton bollworms are controlled by– **Cry I Ac and Cry II Ab gene**
- Plants, bacteria, fungi and animals whose genes have been altered by manipulation are called– **Genetically modified organisms (GMO)**
- Bt cotton is resistant against– **Dipterans, Lepidopterans, Coleopterans**
- An American company who prepared two DNA sequences corresponding to A and B chains of human insulin to produce insulin chain with the help of plasmids of E.Coli– **Eli Lilly**
- T-DNA is– **Tumor inducing DNA**
- Indian traditional products were tried to used by other nations or companies as their own patent– **Basmati rice, Turmeric, Neem**
- Revolution helped in triple the food supply– **Green revolution**
- The tumor inducing capacity of Agrobacterium tumifaciens is located in large extrachromosomal plasmid called– **Ti - plasmid**
- CrylAc endotoxins obtained from Bacillus thuringiensis are effective against– **Boll worms**
- B. thuringiensis form protein crystal, that phase of their life– **Growth phase**
- ..... gene control cotton bollworms– **CryIAc, CryIIAb**
- ..... gene controls corn borer– **CryIAb**
- Golden Rice– **GM rice, Rich in Vit A, Prevents blindness**
- All are biotechnological applications in order to increase food production except– **Apiculture**
- Insect resistance transgenic cotton has been produced by inserting a piece of DNA from– **A bacterium**
- The mechanism of using of complimentary dsRNA that binds to and prevents translation of a particular mRNA is called– **RNA silencing**
- The combination of risk are associated with genetically modified food– **Toxicity, Alergic reaction**
- In RNAi, genes are silenced using– **dsRNA**
- Bacterium commonly used in plant genetic engineering is– **Agrobacterium tumefaciens**
- The used as a best genetic vector in plants– **Agrobacterium tumefaciens**
- Tobacco plants resistant to a nematode have been developed by the introduction of DNA that produces (in the host cells)– **Both sense and anti-sense RNA**
- RNAi takes place in all eukaryotes as a method of– **Cellular defense**
- The genetically-modified (GM) cotton in India has been developed for– **Insect-resistance**
- The agricultural challenges cannot be solved with transgenic techniques– **Public preference for organic vegetables**
- An improved variety of transgenic basmati rice– **Gives high yield and is rich in vitamin A**

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- Transgenic crops are modified through genetic engineering to develop natural resistance to insect pests. One is a transgenic plant– **Tobacco & cotton**
- High yield & production of toxic protein crystals which kill dipteran pests – **Characteristics of Bt cotton**

10.2 Biotechnological Applications in Medicine

- Transposons can be used– **Gene silencing**
- Human insulin is synthesized as a prohormone, which contains as extra stretch is called– **C-peptide**
- When gene targeting involving gene amplification is attempted in an individual's tissue to treat disease, it is known as– **Gene therapy**
- The first clinical gene therapy was done for the treatment of– **SCID (Severe Combined Immuno Deficiency) resulting form deficiency of ADA**
- ADA is an enzyme which is deficient in a genetic disorder SCID. What is the full form of ADA– **Adenosine deaminase**
- C-peptide of human insulin is– **Removed during maturation of pro-insulin to insulin**
- Human insulin is being commercially produced from a transgenic species of– **Escherichia**
- A genetic disorder can be cured through– **Gene therapy**
- Gene therapy can be referred to as– **Treatment of diseases caused by genetic defect**
- The first clinical gene therapy was given in 1990 to a 4- year old girl with- **ADA (Adensoine deaminase deficiency)**
- Adenosine deaminase deficiency can be permanently cured by the methods that is– **Gene therapy at early embryonic stages**
- Introduction of gene isolated from the bone marrow cells which produce ADA into the cells of the patient at early embryonic stages the permanent cure of adenosine deaminase (ADA) deficiency in– **children**
- Early detection of a disease is possible by– **PCR, Recombinant DNA technology and ELISA**
- A doctor while operating on an HIV(+)ve patient accidentally cuts himself with a scalpel. Suspecting himself to have contracted the virus which test will he take to rule out/confirm his suspicion– **PCR**
- Technique used to detect the DNA in a clone is– **Autoradiography**
- Identify the process based on principle of antigen antibody interaction– **ELISA**
- ADA enzyme is majorly synthesized in– **Lymphocytes**
- _____ of the Government of India regulates GM research and safety of introducing GM organisms for public services– **Genetic Engineering Approval Committee**
- DNA probe used in fingerprinting are– **DNA segments having radioactive isotopes**
- Introduction of gene for adenosine deaminase in persons suffering from Severe Combined Immuno Deficiency (SCID)– **Gene therapy**
- Genetically engineered insulin contains A and B chain linked together by - **Disulphide bridges**
- Malfunctioning of immune system due to the deficiency of adenosine deaminase– **ADA deficiency**
- About ____ recombinant therapeutics have been approved worldwide for human use– **30**
- T-DNA is used by– **Agrobacterium tumifaciens**
- Meloidegyne incognitia causes infection in roots of tobacco plant belongs to– **Nematoda**
- ADA deficiency can be cured by- **Bone marrow transplantation**
- First clinical gene therapy given in– **1990**
- Safety of batches of vaccine is tested on– **Transgenic monkey**
- GM plants useful in– **Make crops more tolerant to stresses**
- α-1-antitrypsin is used– **Treatment of Emphysema**
- Technique is of least importance for early diagnosis of disease– **Serum biochemical study**
- Removed during maturation of insulin is– **The C-peptide**
- Early molecular diagnosis can be done by– **PCR, ELISA**
- ELISA is based on– **Antigen - Antibody interaction**
- Correction of a genetic defect involves delivery of a normal gene into the individual or embryo to take over the function of and compensate for the normal functional gene is called– **Gene therapy**
- ADA deficiency results in– **Inability of immune system to function normally**
- Early diagnosis and understanding of it pathophysiology are required– **For effective treatment of a disease**

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- Technique used to detect the complementary DNA in a clone– **Autoradiography**
- It is a single stranded DNA or RNA, tagged with a radioactive molecule and is used to detect mutated gene– **Probe**
- The genetic defect - adenosine deaminase (ADA) deficiency may be cured permanently by– **Introducing bone marrow cells producing ADA into cells at early embryonic stages**

10.3 Transgenic Animals

- Animals that have had their DNA manipulated to possess and express a foreign gene are called– **Transgenic animals**
- The transgenic animals are those which have– **Foreign DNA in all its cells**
- Genetic engineering has been successfully used for producing– **Transgenic mice for testing safety of polio vaccine before use in humans**
- It is beneficial to have _____ by biotechnology because it is less expensive, it is non- allergic and it can be produced in mass - **Insulin**
- The milk produced by Rosie contained– **Human alpha-lactalbumin**
- Transgenic plants are developed by– **Introducing foreign genes**
- The transgenic animals are those which have– **Foreign DNA in all its cells**
- Introduction of transgenes will result in– **Formation of a new species, Formation of a new protein**
- Transgenic models exist for all of the disease except– **Hypertension**

10.4 Ethical Issues

- The step that has been taken by Government of India to cater to the requirement of patent terms and other emergency provisions in this regard– **Indian Patents Bill**
- A monopoly granted to a person who has either invented a new and useful article, made improvement in an existing article or invented a new process of making an article is called– **Patent**
- That variety of rice was patented by a U.S. company even though the highest number of varieties of this rice are found in India– **Basmati**
- The organisation which makes decisions regarding the validity of GM research and the safety of introducing GM-organisms for public services is– **Genetic Engineering Approval Committee**
- The country that has got patent rights on Basmati rice– **America**
- Exploitation of bioresources without authentic permission– **Biopiracy**
- Genetic engineering approval committee stands - **GEAC**
- In India ____ recombinant therapeutics are marketed till 2006– **12**
- An infection by viruses having RNA genome, mobile genetic elements (transposons) that replicates via and RNA intermediate source of complementary RNA is - **RNA interference**
- GEAC (Genetic Engineering Approval Committee) is set by– **Indian government**
- Unauthorized use of bio-resources and traditional knowledge of bio-resources is– **Biopiracy**
- The government of India to cater to the requirement of patent terms and other emergency provisional in this regard. The step is– **Indian patents bill**
- The illegal and unlawful development of biomaterials without payment to the inhabitants of their origin is called– **Biopiracy**
- That indian plants have been patented many times by western countries for their commercial use– **Turmeric, Neem, Basmati**
- That varieties of Basmati rice are grown in India– **27**
- Organisms that can be used to gain commercial benefits are called– **Bioresources**

10.5 Miscellaneous

- A probe ..... is a molecule used to locate homologous sequences in a mixture of DNA or RNA molecules could be– **Either RNA or DNA**
- Pathophysiology is the– **Study of altered physiology of host**
- ADA is an enzyme ..... is deficient in a genetic disorder SCID. The full form of ADA is– **Adenosine deaminase**
- Molecular diagnostic techniques is very useful for early detection disease– **ELISA Technique**
- The adenosine deaminase deficiency results into– **Dysfunction of Immune system**
- A 'new' variety of rice was patented by a foreign company though such varieties have been present in India for a long time. This is related to– **Basmati**

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EXAM POINT

Role of Biotechnological Application in Agriculture

Pusa komal for bacteria blight and pusa swarnim for white rust are processed in these crops respectively– **Cow pea and Brassica**	**AP EAPCET-10.05.2023, Shift-II**
Insect resistance transgenic cotton has been produced by inserting a piece of DNA from– **A bacterium**	**UP CPMT-2004**
The Triticale is an intergeneric hybrid between– **Wheat and rye**	**BHU PMT-2003**
The toxic substances released from Bacillus thuringiensis affects _____ of insect larva. **Gut**	**MHT CET 5.10.2020 Shift-I**
Rotenone is a– **Bioinsecticide**	**DUMET-2010**
Obtained from genetic engineering is– **Golden rice**	**DUMET-2008**
Pesticides is banned now-a-days– **DDT**	**HP CET-2011**
The strategy used to prevent the nematode infection in the roots of tobacco plant is called– **RNA interference**	**J&K CET-2014**
Bacillus thuringiensis (Bt) strains have been used for designing novel– **Bioinsecticidal plants**	**J&K CET-2014 / AIPMT-2005 / SRM JEE-2017**
Cry-IAC effectively controls– **Cotton bollworms**	**Karnataka CET-2022**
Main objective of production/use of herbicide resistant GM crops is to– **Reduce herbicide accumulation in food particles for health safety**	**BHU PMT (Screening)-2010**
Biopesticides are derived from natural materials and are used to manage – **Insects, Diseases, Weeds**	**Uttarakhand PMT-2009**
The DNA of Ti-plasmid which is obtained from Agrobacterium tumefaciens is used in genetic engineering this DNA is also called– **T-DNA**	**Haryana PMT-2002**
The bacteria Pseudomonas is useful because of its ability to– **Decompose a variety of organic compounds**	**Haryana PMT-2004**
Transgenic crops are modified through genetic engineering to develop natural resistance to insect pests. Transgenic plant is– **Tobacco and cotton**	**Haryana PMT-2003**
Name has been assigned to the genus produced by a cross between cabbage and radish is– **Raphanobrassica**	**Uttarakhand PMT-2008**
GM brinjal in India has been developed for resistance against– **Insects**	**Rajasthan PMT-2011**
Flooding of the field is an effective control measure for this type of pathogen– **Nematode**	**BCECE-2009**
Fungicides, herbicides, insecticides nematicides and rodenticides are examples of– **Pesticides**	**BCECE-2002**
The part of cotton producing pure cellulose is– **Seed hair**	**BCECE-2007**
The pesticide used as preventive measure in buildings is– **Aldrin**	**MGIMS Wardha-2003**
Introduction of food plants developed by genetic engineering is not desirable because – **There is danger of coming viruses, allergens and toxins with introduced crop**	**AIPMT-2002**
Tobacco plants resistant to Meloidogyne incognita were developed using a method of cellular defence it relates to– **Silencing the translation of specific mRNA**	**TS EAMCET-2015**
Breeding crops with higher levels of vitamins and minerals or higher proteins and healthier fats is called– **Bio-fortification**	**NEET-2022**
A 'new' variety of rice was patented by a foreign company, though such varieties have been present in India for a long time. This is related to– **Basmati**	**NEET-2018**
The vaccine that is produced by using genetically modified yeast– **Hepatitis-B**	**AP EAPCET-11.07.2022 Shift-I**
Enzymes, vitamins and hormones can be classified into a single category of biological chemicals, because of– **Help in regulating metabolism**	**AIPMT-2005**

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Tobacco plants resistant to a nematode have been developed by the introduction of DNA that is produced in the host cells as– **Both sense and anti-sense RNA**	**AIPMT (Mains)-2012**
Bioinsecticide used as– **Chrysanthemum cinerarifolium**	**AIIMS-2016**
Biolistic (gene gun) is suitable for– **Transformation of plant cell**	**AIIMS-2015**
Cultivation of Bt cotton has been much in the news. The prefix Bt means– **Carrying an endotoxin gene from Bacillus thuringienesis**	**AIIMS-2004**
The antisense construct of ACC synthase gene (RNA) was used in production of– **Flavr savr (tomato)**	**BCECE-2015**
DEVINER and COLLEGO are two trade names in agriculture. They are used as– **Bioherbicides**	**J&K CET-2001**
Production of superior F_1 hybrids is called– **Heterosis**	**J&K CET-2010**
Insect pest resistant Bt cotton plant was developed using– **Transgenic technology**	**WB JEE-2014**
Hydroponics is the method of– **Plant development in water without soil**	**J&K CET-2011**
Bio-engineered bacteria is utilized for cleaning of marine oil slicks– **Pseudomonas putida**	**BVP-2009**
The field application of biotechnology occurs is– **Bio-medicine, Agriculture, Environmental field**	**GUJCET-2015**
Bacillus thuringiensis forms protein crystals the contain insecticidal protein is– **Binds with epithelial cells of midgut of the insect pest ultimately killing it**	**AIPMT (Mains)-2011**
"Jaya" and "Ratna" developed for green revolution in India are the varieties of– **Rice**	**AIPMT (Screening)-2011**
Role of Biotechnological Applications in Medicines	
The molecular structure of insulin was first described by– **Sanger**	**MGIMS Wardha-2004 / UP CPMT-2004**
First hormone produced artificially by culturing bacteria is– **Insulin**	**Haryana PMT-2007**
Genetically engineered human insulin humulin was launched by American drug company on– **5th July 1983**	**AMU-2006, VMMC-2006**
Kohler and Milstein developed biotechnology for– **Monoclonal antibodies**	**MGIMS Wardha-2003**
Hybridoma technology is used to– **Formation of monoclonal antibodies**	**MGIMS Wardha-2003**
Production of a human protein in bacteria by genetic engineering is possible because– **The genetic code is universal**	**AIPMT-2005**
Vaccines prepared through recombinant DNA technology are called– **3rd generation vaccine**	**CMC Vellore-2013**
The 'clot buster' produced by Streptococcus and modified by genetic engineering is– **Streptokinase**	**Kerala PMT-2012**
The first clinical gene therapy was given for treatment– **Adenosine deaminase deficiency**	**AIPMT (Mains)-2012**
In one of the techniques of recombinant insulin production the genes for α and β polypeptides were inserted into the plasmid by the side of– **β galactosidase gene**	**Karnataka CET-2013**
An anticoagulant protein produced from transgenic Brassica napus, which prevents blood clotting is known as– **Hirudin**	**AIIMS-2006**
The Bacterial DNA that are used as biosensors is– **Biomining**	**AP EAMCET-25.09.2020 Shift-I**
The number of amino acids in B chain of insulin– **30**	**AP EAMCET-25.04.2018 Shift-I**
A drug obtained through genetic engineering and useful for treating infertility is– **Chorionic gonadotropin**	**Punjab MET-2007**
Rat poison is obtained from– **Urginea**	**J&K CET-2010**
Insulin receptors are– **Extrinsic protein**	**DUMET-2007**
The two polypeptides of human insulin are linked together by– **Disulphide bridges**	**NEET-2016 Phase-I**

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Genetic engineering has been successfully used for producing– **Transgenic mice for testing safety of polio vaccine before use in humans**	**AIPMT (Screening)-2010**
Commercially produced by biotechnological procedures is– **Insulin**	**AIPMT (Mains)-2010**
The function of protein GLUT-4 is– **Enables glucose transport into cells**	**Karnataka CET-2019**
C peptide is mainly present in– **Proinsulin**	**TS EAMCET-02.05.2018 Shift-II**

Gene Therapy and Molecular Diagnosis

Gene therapy is a treatment that can be done with– **Persons of any age and any condition**	**J&K CET-2014**
Total number of recombinant therapeutics have been used for human diseases throughout the world– **30**	**J&K CET-2014**
The name of first cloned sheep is– **Dolly**	**BVP-2005**
The transgenic animals are those which have– **Foreign DNA in all of their cells**	**HP CET-2018**
The reasons that is mainly responsible for graft rejection in transplantation of organs is– **Cell-mediated response**	**NEET (Re-Exam)-04.09.2022**
Pathogenic bacteria gain resistance to antibiotics due to changes in their– **Plasmids**	**NEET (Re-Exam)-04.09.2022**
The colonies of recombinant bacteria appear white in contrast to blue colonies of non-recombinant bacteria because of– **Insertional inactivation of alpha-galactosidase in recombinant bacteria**	**NEET-2013**
Mule is an example of– **Interspecific hybridization**	**MHT CET-2017**
The first clinical gene therapy was administered to cure the deficiency of– **Severe Combined Immuno Deficiency**	**TS EAMCET-30.07.2022 Shift-I**
Vital stains are employed to study– **Living cells**	**DUMET-2011**
RNA interference is essential for the– **Cell defence**	**AIIMS-2012**
Gene library or DNA library has collection of– **c DNA only**	**AIIMS-26.05.2019 Shift-II**
The vector suitable to clone long fragments of DNA is– **Cosmids**	**Uttarakhand PMT-2010**

Transgenic Animals

The first transgenic crop was– **Tobacco**	**WB JEE-2006**
The transgenic animals are those which have– **Foreign DNA in all its cells**	**Punjab MET-1999**
Holstein–Friesian, Brown–Swiss and Jersey are all well known– **Exotic breeds of cow**	**JCECE-2018**
Maximum number of existing transgenic animals is of– **Mice**	**AIPMT (Screening)-2011**

Biopiracy and Ethical Issues

The laws and rules to prevent unauthorized exploitation of bio-resources are termed as– **Biopatenting**	**NEET-2020 Phase-II**
The human protein α-1 antitrypsin is obtained from– **Transgenic animal**	**Karnataka CET-2017**
A transgenic rice (golden rice) has been developed for increased content of– **Vitamin - A**	**DUMET-2011**
A regulatory body working under MoEF for the release of transgenic crops is– **GEAC**	**DUMET-2011**
In transgenics, expression of transgene in target tissue is determined by– **Reporter**	**AIIMS-2008 / CMC Vellore-2012, Manipal -2014 / AFMC-2008**
'Hisardale' is a new breed of sheep developed in Punjab by using the– **Cross-breeding technique**	**TS EAMCET-08.05.2019 Shift-I**
Hinny is an interspecific hybrid of– **Male horse and female donkey**	**TS EAMCET-09.08.2021 Shift-I**
Exploitation of bioresources of a nation by multinational companies without authorization from the concerned country is referred to as– **Biopiracy**	**NEET (Odisha)-2019**
Biopatent is granted for biological entities by____authority of a country. **Government**	**MHT CET-2018**

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11.

ORGANISMS AND POPULATIONS

11.1 Organism and its Environment

- In a growing population of a country pre-reproductive individuals are more than the– **Reproductive individuals**
- Lichens are the associations of– **Fungus and algae**
- Partial root parasite is– **Sandalwood**
- The organisms that reproduces sexually only once in its life time– **Banana plant**
- Presence of plants arranged into well defined vertical layers depending on their height can be seen best in– **Tropical rainforest**
- Large woody vines are more commonly found in– **Tropical rainforests**
- The most economical and effective method to control soil pH is the application of– **$CaCO_3$**
- Inspite of interspecific competition in nature, which mechanism the competing species might have evolved for their survival– **Resource partitioning**
- Pneumatophores occur in– **Halophytes**
- The organisms which can tolerate and thrive in a wide temperature range are known as–**Eurythermal**
- According to Allen's Rule, the mammals from colder climates have–**Shorter ears and shorter limbs**
- Salt concentration (salinity) of the sea measured in parts per thousand is– **30-35**
- A well growing herbaceous plant in the forest if it is transplanted outside the forest in a park, will happen– **It may not survive because of change in its microclimate**
- -1^0C to 13^0C mean annual temperature and 50 to 250 cm precipitation account for the formation of a biome– **Coniferous forest**
- The population is set of conditions that an organism can tolerate and resource it uses– **Ecological niche**
- Seasonal variations on earth occur due to its– **Tilted axis, Revolution around sun**
- Different biomes are formed due to annual variations in ..... over the earth's surface– **Temperature, Precipitation, Incident solar radiation**
- Deserts, rainforest, tundra, etc. are examples of– **Biome**
- Characteristics of a terrestrial biome are strongly influenced– **Flora, Climate, Fauna**
- ..... occurs in equatorial regions where rainfall and warmth are abundant, while ..... biome lacks rain– **Tropical rainforest, desert**
- The key elements that determine differences in environmental conditions of different habitats include– **Temperature, light, Soil**
- Mango trees can not grow in temperate regions. The most important environmental factor responsible for it is– **temperature**
- Temperature is considered as the most ecologically relevant environmental factor because it affects– **Physiology, Morphology, Geographical distribution**
- Organisms that can tolerate a wide range of salt concentration are termed as– **Euryhaline**
- A freshwater organism cannot survive in a water body that has greater ..... than its original habitat– **Salt concentration**
- Water plays vital role in living organisms because– **It makes 90% of the protoplasm**
- A place has very scanty rainfall, the dominant plants there may be– **Opuntia**
- Many freshwater organisms cannot live for long in seawater because the surrounding water will be ..... to body cells and ..... may occur– **Hypertonic, exosmosis**
- Many animals use the diurnal and seasonal variations in light intensity and photoperiod to time their– **Migration, Reproductive activities, Foraging**
- Nature and properties of soil depends upon– **Climate, Weathering process, Development of soil**
- Water holding capacity of the soil depends upon– **Chemical composition of soil, Particle size of soil, Aggregation of soil particles**
- Tendency of biological systems to resist change– **Homeostasis**
- An animal that can survive at 10^0C and 40^0C both, can be placed under the category of– **Regulators**
- Organisms that can maintain a constant internal temperature are called– **Homoeothermic**

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- When we are in a hot room, we sweat profusely. It is a ..... means of maintaining homeostasis– **Physiological**
- Adaptation of animals to the cold climate is an important– **Reduced surface area to volume ratio**
- When organisms change their location temporarily to escape from stressful environment and return when stressful period is over, it is called–**Migration**
- Organisms show migration in order to avoid unfavourable conditions of– **Temperature, Food availability, precipitation**
- ..... is an attribute of the organism (morphological, physiological, behavioural) to survive and reproduce in its habitat– **Adaptation**
- Opuntia has spine like leaves which help in– **Reducing the rate of transpiration**
- An inhabitant of Varanasi goes to Rohtang and experiences nausea, fatigue and heart palpitations. It is because– **Altitude sickness, his RBC count is lower than required**
- Conformers are inactive in adverse conditions due to– **Inability to maintain homeostasis**
- A pond there were 40 lotus plants last year and through reproduction 10 new plants are added, taking the current population to 50, the birth rate is– **0.25**
- Deep (>500 m) in the oceans, the environment is perpetually dark and its inhabitants are not aware of the existence of a celestial sources of energy called_____. **Sun**
- The stage of suspended development is– **Diapause**
- Predators in nature are prudent, because– **They do not over exploit their prey**
- How different organisms are adapted to environments in terms of not only survival but also reproduction tries to understand - **Physiological ecology**
- The Prickly pear cactus introduced into Australia the early 1920's caused havoc by spreading rapidly in to millions of hectares of rangeland because– **Absence of natural predator**
- Resource partitioning is an important mechanism which promotes - **Co- existence**
- Competitive exclusion principle stating that inferior species is eliminated eventually after prolonged competition, given by– **Gause**
- The interdependent evolution of flowering plants and pollinating insects together is– **Co-evolution**
- Reducing the rate of transpiration has spine like leaves help in– **Opuntia plant**
- Relationships between organism and their environment is known as - **Ecology**
- Ecology factors which are most strong determinants of various biomes - **Temperature and precipitation**
- Soil and their characteristics are concerned with - **Edaphic factors**
- Soil formation is initiated by the phenomenon of– **Weathering**
- The association between two species in which both benefit– **Mutualism**
- A bird introduced from one country to another became a serious pest due to– **Absence of natural competition**
- A population has more younger individuals compared to the older individuals, the status of the population after some years– **It will increase**
- _____ parameters are used for tiger census in our country's national parks and sanctuaries– **Pug mark and faecal pellets**
- The study of the interactions among organisms between organisms and its physical environment is called– **Ecology**
- Biome are distributed on earth. It kinds is– **6**
- ..... is the most ecologically relevant environment factor– **Temperature**
- Temperature decreases as we go from– **Plain to mountain tip, Equator to poles**
- Mango is not able to grow in– **Germany**
- ..... is a fish which breed once in their whole life– **Pacific salmon fish**
- Homeostasis is– **Thermoregulation, Osmoregulation**
- The living organisms which influence other organisms are – **Biotic factors**
- Deserts, rainforests, tundra, etc, are examples of– **Biome**
- The important adaptation of animals to cold climate is– **Thick layer of body fat**
- The condition in which certain organisms delay their development and spend some period in a state of inactiveness during periods of unfavorable conditions is called– **Diapause**
- Very small animals are rarely found in polar regions. The main region of this fact is– **Because they have to expend much energy to generate body heat through metabolism**
- Stenohaline animals are the animals ..... can tolerate– **Narrow range of fluctuations in salinity**
- Organisms change their location to escape from harsh environment, it is called as– **Migration**
- Algae are found in deepest ocean waters– **Red algae**
- Example of hibernation in bear and aestivation is fishes is– **Suspend**

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- Ecology is mainly concerned with four level of organization. They are– **Organisms, population, community, biome**
- Lead to the formation of a wide variety of habitats within each biome is– **Regional variations, Local variations**
- Niche of a species refers to– **Specific and habitual function**
- The salt concentration is measured as– **Salinity in parts per thousand**
- ..... is not a quality of an adaptation to seasonal changes in habitat is– **Migration**
- The major biomes of India are– **Deciduous forest, Desert, Sea coast, Tropical rain forest**
- Adaptive measure to protect against extreme heat by poikilotherms is– **Aestivation**
- The magnitude of salinity in inland water is– **< 5 ppm**
- Type of fauna largely depends upon the– **Type of vegetation**
- Several plants and animal species present together at a place constitute a– **Biome**
- Sundarban contains mainly– **Mangrove plants**
- Adaptations in an organism are meant for– **Optimum survival and reproduction**
- Praying mantis is a good example of– **Camouflage**
- Interaction of sea anemone and clown fish is– **Commensalism**
- Altitude sickness removed by– **Physiological adaptation**
- Behavioral, morphological and physiological are known as - **Adaptation**

11.2 Populations

- In the exponential growth equation $N_t = N_0e^{rt}$, e represents– **The base of natural logarithms**
- Amensalism can be represented as– **Species A (–); Species B (0)**
- Asymptote in a logistic growth curve is obtained when– **K = N**
- Amensalism is an association between two species where– **One species is harmed and other is unaffected**
- Relation of an individual to its environment is the– **Autecology**
- A zone of transition between two communities– **Ecotone**
- Composed of all living organisms present on earth which interact with the physical environment– **Biosphere**
- The physical position and functional role of a species within the community is– **Ecological niche**
- If an organism's body pattern resembles its environment making it difficult to spot, it is called– **Camouflage**
- Some species of insects and frogs found in tropical rainforests of South America are highly poisonous as well as brightly coloured to avoid being detected easily by the predator. This is referred to as– **Warning coloration**
- Total number of individuals of a species per unit area and per unit time is called– **Population density**
- Percentage of individuals in successive age of a given population is called– **Age distribution**
- If the age distribution is plotted for a population, the resulting structure is called– **Age pyramid**
- The age structure of a population represents– **Relative number of individuals at each age**
- The age structure of a population influences population growth because– **Different age groups have different reproductive capabilities**
- A population with a larger proportion of older individuals than younger ones will likely to–**Decline**
- An urn shaped population age pyramid represents– **Declining population**
- In some cases, population density is measured in terms of biomass rather than in terms of numbers because it is a more meaningful measure when the considered organisms– **Vary greatly in size**
- The cases that population density can be easily determined by not utilising biological-entities directly– **Tiger census**
- The factors that has a negative effect on the population growth rate– **Emigration**
- The factors that influences population density under normal conditions– **Deaths**
- Resources in the habitat are unlimited, each species has the ability to realize its full innate potential to grow in number observed in a population– **Exponential growth**
- The maximum possible number of individuals that a habitat can support is called its– **Carrying capacity**
- Species interaction with negative influence on both is referred to as– **Competition**
- You never see cattles or goats browsing on weed Calotropis, the reason is– **The plant produces poisonous cardiac glycosides**
- Two different species cannot live for long duration in the same niche or habitat. This law is called– **Competitive exclusion principle**

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- Two species competing for the same resource can avoid competition by choosing different habits. This phenomenon is called ..... and was supported by – **Resource partitioning, MacArthur**
- When two similar species live in the same area, they may evolve to become more different in order to– **Reduce competition**
- Basic unit of ecological hierarchy is– **An organism or an Individual**
- Mango, tuna fish, snow leopards are– **Stenothermal**
- Smaller animals tend to lose body heat very fast as compared to larger animals because they have– **Higher surface area to volume ratio**
- _____ mammal excretes concentrated urine to avoid water loss– **Kangaroo rat**
- Decrease the density of a population– **Mortality and emigration**
- The growth of human population shows– **Sigmoid growth curve**
- _____ contributes an in increase in population density– **Natality**
- Realistic growth model– **Logistic growth**
- Large number of small size offspring is– **Oysters, Pelagic fishes**
- Monarch butterfly is highly distasteful because it acquires chemical while feeding on– **Poisonous weed**
- Organisms breed once in life– **Pacific Salmon fish and bamboo**
- Generally the least affected by competition than others– **Carnivores**
- Exponential growth is– **Geometrical growth, Have unlimited resources, J - shaped curved is obtained**
- If one species get benefit and the other species do not have any effect, then this types of interaction is called– **Commensalism**
- Cuscuta is– **Ectoparasites**
- Barnacles growing on the back of the whale getting benefit is an example of– **Commensalism**
- Number of immigration is more than emigration and death is lower than natality. Growth curve of population will show– **Exponential phase**
- Intrinsic rate may remain constant or increase in which type of interaction– **Commensalism**
- One of the petals of flower mimics female bee– **Ophrys**
- The age structure of a population influences population growth because– **Different age groups have different reproductive capabilities**
- Population density can be easily determined by utilizing non - biological parameter is– **Tiger census**
- Death rate and birth rate are the terms applicable to– **Population ecology**
- Mac Arthur observed that 5 species of Warblers (birds) can coexist on same fig tree due to behavioural difference in their foraging activities. This is an example of– **Resource partitioning**
- The age and distribution of a population is determined by the– **Timing of births & deaths, Rate at which population is growing**
- The movement of individuals of the same species into a population is called– **Immigration**
- The number of new individuals produced in a unit time per unit population is its– **Natality**
- A population shows exponential growth when the– **Unlimited resources are present in the habitat**
- Asymptote is a stage when a population is– **Stabilized**
- Small fish gets stuck near the bottom of a shark and derive its nutrition from it. This kind of association is called as– **Commensalism**
- Gause's principle of competitive exclusion states that– **No two species can occupy the same niche indefinitely for the same limiting resources**

11.3 Miscellaneous

- Composed of all living organisms present on earth which interact with the physical environment is– **Biosphere**
- Ecological niche is– **The physical position and functional role of a species within the community**
- Formation of tropical forests needs mean annual temperature and mean annual precipitation as– **18 - 25^{0}C and 150 - 400 cm**
- The forest plants controls the light conditions at the ground– **Tall trees**
- Partial root parasite is– **Orobanche**
- The impact of immigration on population density is– **Positive**
- The functional role played by the organism where it lives– **Niche**
- Natality refers to– **Birth rate**
- In a growing population of a country– **Pre-reproductive individuals are more than the reproductive individuals**
- The population interactions is widely used in medical science for the production of antibiotics– **Amensalism**

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EXAM POINT

Ecology	
The study of organisms with their environment is called– **Ecology**	**Rajasthan PMT-1996 / AIPMT-1993**
A species which adds upto only a small proportion of the total biomass of a community, yet has a huge impact on the communitys organization and survival is known as- **Keystone species**	**DUMET-2008 / WB JEE-2006, BCECE-2012 / AIPMT-2004**
The soil which is transported by wind is known as– **Aeolian**	**Manipal-2015 / VMMC-2012, 2007, UP CPMT-2012, 2008 / Rajasthan PMT-2008, BCECE-2001 /CG PMT-2008**
Air spaces are present in– **Hydrophytes**	**BHU PMT (Mains)-2006**
Ecotypes are– **Only morphologically different, Only genetically different**	**Uttarakhand PMT-2011**
The cultivation of plants without the use of soil is called– **Hydroponics**	**Tripura JEE-2022**
Study of ecological communities is called– **Synecology**	**AP EAPCET-12.07.2022 Shift-I**
Plants growing in acidic soil are termed as– **Oxylophytes**	**JIPMER-2002 / Rajasthan PMT-1997**
In ecotone some species become abundant– **Edge species**	**DUMET-2006**
The basic unit of study in Ecology is– **Organism**	**DUMET-2011**
Different species residing in different geographical areas are– **Allopatric**	**DUMET-2006 / DUMET-2004**
Greek word for ecology is– **Oekologie**	**AIIMS-2010**
Two species occupying same or overlapping area are called as– **Sympatric**	**Punjab MET-2008 / MGIMS Wardha-2006**
The zone of the biosphere, no human activity is permitted– **Core zone**	**BCECE-2015**
The 'niche' of a species is meant for– **Habitat and specific functions of a species**	**AIPMT-1996**
Those animals which are deep dweller in sea are called– **Benthic animals**	**AIPMT-1996**
The abundance of a species population, within its habitat, is called– **Niche density**	**AIPMT-1995**
Niche overlap indicates– **Sharing of one or more resources between the two species**	**JCECE-2013**
The part of earth and atmosphere supporting life is– **Biosphere**	**BVP-2008**
Earth has maximum amount of oxygen in– **Troposphere**	**BVP-2011**
The term Ecology was coined by– **Haeckel**	**AP EAMCET-24.09.2020 Shift-I**
Biological concept of species is mainly based on– **Reproductive isolation**	
Ecological study of individual species is known as– **Autoecology**	**AP EAMCET-03.09.2021 Shift-I**
Organisms living in constant environmental conditions get– **Niche specialisation**	**TS EAMCET-09.08.2021 Shift-II**
The term Niche was first used by– **Joseph Grinnel (1917)**	**UP CPMT-2011**

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Plants growing in dry and saline soil are called– **Halophyte**	**UPCPMT-2002**
Characteristics of a biological community is– **Stratification**	**AIPMT (Screening)-2010**
The species of plants that play a vital role in controlling the relative abundance of other species in a community are called– **Keystone species**	**AP EAMCET-2011**
Recapitulation theory was proposed by– **E. Haeckel**	**UP CPMT-2002**
A system of rotating crops with legume or grass pasture to improve soil structure and fertility is called– **Ley farming**	**NEET-2016 Phase-I**
Organism and its Environment	
The interspecies relationship in which one organism is harmed while other remains unaffected– **Amensalism**	**TS EAMCET 10.05.2023 Shift-I**
Nitrates and phosphates flowing from agricultural farms into water bodies are a significant cause of– **Eutrophication**	**RE-NEET (UG)-06.06.2023 (Manipur)**
The species of plants that plays a vital role in controlling the relative abundance of other species in a community is called– **Keystone ospecies**	**RE-NEET (UG)-06.06.2023 (Manipur)**
Among 'The Evil Quartet', which is considered the most important cause driving extinction of species– **Habitat loss and fragmentation**	**NEET (UG) 07.05.2023**
In our biosphere, the most important and vast area is covered by hydrosphere. Hydrosphere has– **1.4 billion cubic km of water**	**AMU-1995**
Maximum and minimum, mean annual precipitation is observed respectively, the region is– **Tropical forest, Desert**	**GUJCET-2022**
A few organisms can tolerate and thrive in a wide range at temperatures. They are known as– **Eurythermal**	**GUJCET-2023**
The range of latitudes for temperate region is– **$40^{o} - 60^{o}$**	**GUJCET-2011**
The forests which is known as the 'lungs of the planet earth' is– **Amazon rain forest**	**Assam CEE-2014**
Ozone in stratosphere extends– **20-25 km**	**AIIMS-2007**
During summer the density of the surface of the water decreases due to increase in its temperature. The upper most warm layer of a lake is called– **Epilimnion**	**TS EAMCET-03.05.2018 Shift-I**
The sphere of living matter together with water, air and soil on the surface of earth is called– **Biosphere**	**AIIMS-2001, 1997**
The boundry/transition between two or more communites sharply defined is called– **Ecotone**	**CMC Vellore-2012**
The thylakoid in chloroplast are arranged as– **Stacked discs**	**JIPMER-2005**
Temperate coniferous forest of northern hemisphere are – **Taiga**	**MP PMT-2013**
Bioenergy is always– **Ecofriendly, Cheap**	**CMC Vellore-2011**
The element that percentage weight is highest in both earth's crust and human body is– **Oxygen**	**Karnataka CET-2020**
The biome is richest source of biodiversity including both plant and animals is– **Tropical evergreen forest**	**UP CPMT-2014**
In summer, in lakes upper more warm water is separated from bottom cool water by mid water is called– **Thermal stratification**	**AP EAMCET-12.07.2022 Shift-II**
5th June is celebrated as– **World environment day**	**Manipal-2002, UPCPMT-2002**
Factors of Environment	
Humus is present in– **Horizon-A**	**Rajasthan PMT-2009 / Punjab MET-2009, CMC Vellore-2009 / UP CPMT-2009, 2003, DUMET-2005**

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All living organisms which influence other organisms is called – **Biotic factors**	**JIPMER-2006**
Soil carried by gravity is– **Colluvium soil**	**WB JEE-2007**
Littoral zone is located along the– **Sea**	**DUMET-2011**
Soil particles determine its– **Texture**	**AIPMT-1992**
Soil is a mixture of– **Sand, clay and humus**	**Manipal-2001**
Nature and properties of soil depends upon– **Weathering and climate**	**AP EAMCET-05.10.2021 Shift-I**
Soil type and its composition is considered best for growth and development of common vegetation– **Loamy soil (25-36% field capacity) a mixture of clay and sand**	**UP CPMT-2014**
The soil with poorest water holding capacity is– **Sandy**	**UP CPMT-2011**
Doubling of metabolic activity with every increase in temperature by 10° C is called– **Van't Hoff's rule**	**TSEAMCET-09.05.2019 Shift-I TS EAMCET-02.05.2018 Shift-II**
More than 70% of world's freshwater is contained in– **Polar ice**	**JIPMER-2007**
Adaptations	
Generally, bears avoid winter by undergoing– **Hibernation**	**Karnataka CET-20.05.2023**
Animals having a built in thermostat to maintain constant body temperature are known as– **Homoeothermic**	**UP CPMT-2012 ,2003 / DUMET-2005, JIPMER-2009 / Rajasthan PMT-2008, CG PMT-2008**
Homeostasis is used to describe– **Tendency of the biological – system to resist change**	**VMMC-2015 / CMC Vellore-2014 / AIPMT-1991**
Significance of mimicry is– **Attack (Offence), Protection (Defence)**	**AIPMT-2002 / JIPMER-2002**
Presence of plants arranged into well defined vertical layers depending on their height can be seen best in– **Tropical Rain Forest**	**NEET-2017**
Mycorrhizae are the example of– **Mutualism**	**NEET-2017**
A lizard-like member of reptilia is sitting on a tree with its tail coiled around a twig. This animal could be– **Chameleon showing protective coloration**	**AIIMS-2006**
The animals of cold countries have relatively shorter and poorly developed ears, eyes, hairs and other phenotypic characters. This known by law– **Allen's Law**	**AIPMT-1996**
During adverse season, the therophytes survive by– **Seeds**	**AIPMT-1997**
The organisms which generate heat energy within body and also retain it are known as– **Endothermic**	**AP EAMCET-2005**
Animals undergoes inactive stage during winter, is known as– **Hibernation**	**VMMC-2012 / UP CPMT-2008 / JIPMER-2009**
Maintenance of relatively constant internal conditions (steady state) different from the surrounding environment is called– **Homeostasis**	**TS EAMCET-30.07.2022 Shift-II**
It is much easier for a small animal to run uphill than for a large animal, because– **Smaller animals have a higher metabolic rate**	**NEET-2016 Phase-I**
In Amphibians and reptiles, the body temperature changes corresponding to external temperature. The organisms which show this kind of response is termed as– **Conformers**	**Karnataka CET-2019**

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Two opposite forces operate in the growth and development of every population. One of them related to the ability to reproduce at a given rate. The force opposite to it is called– **Environmental resistance**	**AIPMT-1998 / AIIMS-2008**
It will be happen if the number of organism increased at a place– **Inter species competition, Intra species competition**	**AIPMT-1999**
Populations and its attributes	
The evolutionary force that reduces the genetic variation by removing low frequency alleles– **Genetic Drift**	**AP EAPCET-23.05.2023, Shift-II**
Study of Ecology of population is called– **Demecology**	**Haryana PMT-2008 / JIPMER-2008**
Abundance of a species in a population, within habitat is called– **Niche density**	**MGIMS Wardha-2010 / AIIMS-2002, AIPMT-1995**
According to Alexander von Homboldt– **Species richness increases with increasing area, but only up to limit**	**NEET-2020 Phase-II**
The impact of immigration on population density is– **Positive**	**NEET-2020 Phase-II**
Asymptote in a logistic growth curve is obtained when– **K = N**	**NEET-2017**
In a population, unrestricted reproductive capacity is called as– **Biotic potential**	**AIPMT-2002**
Natality refers to– **Birth rate**	**NEET-2018**
The functional role played by the organism where it lives is known as– **Niche**	**NEET-2018**
The formula for exponential population growth is– **dN/dt = rN**	**AIPMT-2006 / TS EAMCET-02.05.2018 Shift-I, BCECE-2013 / SRM JEEE-2018**
The growth curve of bacterial population in lab is plotted against time. The shape of graph will be– **Hyperbolic**	**AIIMS-2008**
In an area, a population with large size individuals having long life span, more parental care and slow development was present. The type of population growth curve will be– **S-shaped**	**AIIMS-2014**
July 11 is observed as– **World population day**	**AIIMS-2003 / BVP-2002, Rajasthan PMT-1997 / Punjab MET-2006**
"India is a country of youngsters" on this basis, if age pyramid is made. The type of pyramid it will be– **Triangular shape**	**GUJCET-2018**
The type of population where pre-reproductive animals occur in large numbers is– **Growing**	**AP EAMCET-2005**
The population of an insect species shows an explosive increase in numbers during rainy season followed by its disappearance at the end of the season. It shows– **Its population growth curve is of J-type**	**AIPMT-2007**
Geometric representation of age structure is a characteristic of– **Population**	**AIPMT-2007**
Biotic potential or potential natality means– **Natural increase of population under ideal/optimum conditions**	**JIPMER-2014**
Zero growth means– **Natality balance mortality**	**JIPMER-2014**
The growth of a population without limit at its maximal rate and also that, rates of immigration and emigration are equal, then it is called– **Biotic potential**	**AP EAMCET-2009**

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A group of independent and interacting population of different species in a specific area is called– **Community**	**UPCPMT-2002**
Number of new individuals produced in a unit time, per unit population is called– **Natality**	**AP EAMCET-11.07.2022 Shift-II**
Population density of terrestrial organisms is measured in terms of– **Individual per Meter^2**	**Karnataka CET-2007**
Population Interactions	
In this type of interactions the organisms are involved in co-evolution– **Mutualism**	**AP EAPCET-10.05.2023, Shift-II**
Plants offer rewards to animals in the form of pollen and nectar and the animals facilitate the pollination process. This is an example of– **Mutualism**	**RE-NEET (UG)-06.06.2023 (Manipur)**
The interaction where one species is benefitted and the other is neither benefitted nor harmed is called as– **Commensalism**	**J&K CET-2012 / JIPMER-2019**
Small fish get stuck near the bottom of a shark and derives its nutrition from it. This kind of association is called as– **Commensalism**	**UP CPMT-2012, 2008 / VMMC-2012, Rajasthan PMT-2008 / CG PMT-2008**
Association of animals belonging to different species, where both partners are benefitted, is called– **Mutualism**	**Manipal-2006 / AIPMT-1993**
The principle of competitive exclusion was stated by– **GF Gause**	**NEET-2016 Phase-II**
Amensalism can be represented as– **Species A (–); Species B (0)**	**NEET-2021**
The interactions both partners that are adversely affected in– **Competition**	**AIPMT (Re-Exam)-2015**
A sedentary sea anemone gets attached to the shell lining of hermit crab. The association is– **Commensalism**	**NEET-2013, J&K CET-2013**
In a random mating population in equilibrium, which brings about a change in gene frequency in a non-directional manner is– **Random drift**	**AIPMT-2003**
A mutually beneficial association necessary for survival of both partners is– **Mutualism/symbiosis**	**AIPMT-1988**
Competition for light, nutrients and space is most severe between– **Closely related organism growing in the same area/niche**	**AIPMT-1988**
Bacteria and fungi developing on dead decaying organisms are– **Saprophytes**	**AP EAMCET-24.09.2020 Shift-I**
The interaction between "Cuckoo and Crow" is an example for– **Brood parasitism**	**Karnataka CET-2018**
A high density of elephant population in an area can result in– **Intra specific competition**	**AIPMT-2007**
Abingdon tortoise in Galapagos islands became extinct within a decade after goats were introduced. It is an example of– **Competitive exclusion**	**TS EAMCET-02.05.2018 Shift-II**
A mutual beneficial close physical relationship is shown by– **Cladonia, Mycorrhiza**	**UP CPMT-2014**
An interaction favourable to both population, but obligatory to either, is– **Proto-cooperation**	**UP CPMT-2011**
Connel's field experiment on the rocky coast of Scotland, where larger Barnacle Balanus dominates the intertidal area and removes the smaller Barnacle chthmalus. This happened due to– **Competition**	**Karnataka CET-2016**

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12.

ECOSYSTEM

12.1 Ecosystem-Structure and Function

- Vertical distribution of different species occupying different levels in dense vegetation is called– **Stratification**
- Self-regulated, Self-sustained, Segment of environment is a – **Ecosystem**
- Ecosystem is not a functional component of– **Stratification**
- Physical structure, that is characteristic of each type of ecosystem, is formed due to the– **Interaction of biotic and abiotic components**
- _____ represents exotic species– **Eichhornia crassipes**
- David Tilman's long term ecosystem experiments using outdoor plots explained that– **Increased diversity contributed to higher productivity**
- Ecosystem is most productive in terms of net primary production is– **Tropical rainforests**
- Climax community in is a state of– **Equilibrium**
- Different communities of plants, animals and microbes together with their physico-chemical environment– **Ecosystem**
- Organisms which acquire energy and nutrients by digesting the organic molecules of living organisms are– **Consumers**
- The environmental factors regulate the rate of release of nutrients into the atmosphere– **Soil, Moisture, pH, Temperature**
- A group of interconnected food chains is– **Food web**
- In a terrestrial ecosystem the large fraction of energy flows through– **Detritus food chain**
- The last organisms of the food chain, generally– **Top cornivores**
- Primary producers are larger than primary consumers in an population of- **Ecosystem**
- The important defence mechanism in plants against herbivory– **Spines and Toxic chemical**
- Organisms living at the bottom of a sea, called– **Benthic**
- Interaction between biotic and abiotic components leads to formation of a– **Ecosystem**
- _____ is an attribute of the organism (morphological, phsiological, behavioural) to survive and reproduce in its habitat– **Adaptation**
- The prickly pear cactus became unusually abundant after its introduction in Australia, because it– **Has no coevolved herbivores**
- Formation of tropical forests needs mean annual temperature and mean annual precipitation as– **18-25ºC and 150-400 cm**
- Man-made ecosystem is– **Agro-ecosystem**
- The basic components of the ecosystem are– **biotic and abiotic components (Productivity and decomposition, Nutrient cycling, Energy flow)**
- For an ecosystem to work, first primary need is– **Constant input of solar energy**
- Sun is the source of energy in ecosystems except– **Deep sea hydrothermal ecosystem**
- Physical structure, that is characteristic for each type of ecosystem, is formed due to– **Interaction of biotic & abiotic components**
- All ecosystems have no boundary because– **They cannot occur in isolation**
- An ecosystem which can be easily damaged but can recover after some time if damaging effect stops will be having– **Low stability & high resilience**

12.2 Productivity

- Accelerate phosphorus cycle is– **Weathering of rocks**
- In the equation, GPP – R = NPP R represents– **Respiration losses**
- The primary producers of the deep-sea hydrothermal vent ecosystem are– **Chemosynthetic bacteria**
- The net primary productivity of a terrestrial ecosystem is eaten and digested by herbivores–**10%**
- The rate of conversion of light energy into chemical energy of organic molecules in an ecosystem is– **Gross primary productivity**
- The biomass made available by producer for consumption by herbivores and the decomposers is called– **Net primary productivity**
- ..... is the rate of production of organic matter by consumers– **Secondary productivity**
- Primary productivity depends upon– **Light and temperature, Water and nutrients, Photosynthetic capacity of producers**

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- The annual net primary productivity of the whole biosphere is approximately– **170 billion tons**
- Exhibits least productivity is– **Open oceans, desert ecosystem**
- The most productive ecosystem is– **Tropical rainforest**
- Productivity at the second trophic level is always– **Less than the productivity at the first trophic level**
- Mass of living matter at a trophic level in an area at anytime is called– **Standing crop**
- The parameter decreases as succession proceeds– **Net community productivity**
- Freshly fallen dead organic matter is called– **Detritus**
- The rate at which new tissues are formed in consumers in the ecosystem– **Net secondary productivity**
- Death of organism is the beginning of energy and nutrient requirement is meet by degrading organic matter is known as - **Detritus Food Chain**
- Secondary consumer level is– **Birds, fishes, wolf**
- Seral stage exhibit maximum stability– **Climax community**
- During the process of ecological succession, the changes that take place in communities are– **Orderly and sequential**
- The gross primary production minus respiration losses by plants in an ecosystem is– **Net primary production**
- The primary consumers in a pond ecosystem is– **Zooplankton**
- The amount of living matter present in a component population of a particular trophic level is called– **Standing crop**
- The rate at which total biomass or organic matter produced by primary producers in an area per unit time is– **Gross primary productivity**
- When we are in a hot room, we sweat profusely. It is a _____ means of maintaining homeostasis– **Physiological**
- J-shaped growth curve depicts– **Exponential growth when conditions are unlimited**
- Productivity can be expressed in terms of energy as– **Kcal/m^2**
- NPP is the available biomass for the consumption of– **Herbiviores, Decomposers, Producers**
- In terms of dry weight of organic matter, is related to the annual net primary productivity of whole biosphere– **Availability of nutrients**

12.3 Decomposition

- Most animals that live in deep oceanic waters are– **Detritivores**
- Detritivores breakdown detritus into smaller particles. This process is called– **Fragmentation**
- The process of decomposition would be the fastest is– **Tropical rainforest**
- Decomposers like fungi and bacteria are– **Heterotrophs, Saprotrophs**
- During the process of decomposition– **O_2 is consumed and CO_2 is released**
- Rate of decomposition depends upon– **Soil moisture, Chemical composition of detritus, Temperature**
- Rate of decomposition is slower– **If detritus rich in lignin and chitin**
- In hydrosere, marsh meadow stage replaces– **Reed swamp stage**
- Conversion of ammonia and nitrates to gaseous nitrogen– **Denitrification**
- Detritus is formed by– **Decomposition of Raw matter**
- Water-soluble inorganic nutrients go down into soil horizon and get precipitated an unavailable salts by the process of– **Leaching**
- Mineralisation ensures the availability of nutrients for– **Autotrophs**
- Organic detritus is degraded to inorganic substances during– **Catabolism**
- Extremely slow rate of decomposition can be observed in– **Humus**
- Inorganic nutrients are released from humus by the microbial action during– **Mineralisation**
- If we completely remove decomposers from an ecosystem, the ecosystem functioning will be adversely affected because– **Mineral movement will be blocked**
- The bacteria which attack the dead animals are– **At the end of the food chain and are decomposers**
- Humus is an example of– **Organic collodis**

12.4 Energy Flow

- The amount of nutrients, such as carbon, nitrogen, phosphorus and calcium present in the soil at any given time, is referred as– **Standing state**
- The ultimate energy source of all ecosystems is– **Solar radiation**
- Percentage of photosynthetically active radiation (PAR) in the incident solar radiation is– **Less than 50%**
- Percentage of photosynthetically active radiation (PAR) that is captured by plants in synthesis of organic matter is– **2 - 10%**

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- The unidirectional flow of energy from Sun to producers and then to consumers is keeping with the– **First laws of thermodynamics**
- The food chain in which microbes split energy-rich compounds of the producer community is– **Detritus food chain**
- In an aquatic ecosystem, the organism present at the trophic level equivalent to cows in grasslands is– **Zooplanktons**
- The movement of energy from lower to higher trophic level is– **Always unidirectional**
- If 10 joules of energy is available at the producer level, then amount of energy present at the level of secondary consumers is– **0.1 J**
- The energy and biomass relationship between the organisms at different trophic levels can better expressed by– **Ecological pyramids**
- The animals that may occupy more than one trophic levels in the same ecosystem at the same time– **Sparrow**
- Organisms which are associated with first as well as third trophic level are– **Insectivorous plants**
- Pyramid of biomass for a grazing food chain represents– **Gradual decrease in biomass from producers to the tertiary consumers**
- Productivity, Decomposition, Energy flow and Nutrient cycling are– **Functions of ecosystem**
- _____ have high value of biotic potential and short generation time– **Pioneer species**
- Bacterial and fungal enzyme degrade detritus into simpler inorganic substances– **Process of catabolism**
- Capacity to overcome forces, which tend to disturb the balance– **Resilience**
- Total incident light is used in the production process by plants is– **1 to 5%**
- Energy flow in ecosystem is– **Unidirectional**
- Organism occupy a specific place in food chain are called– **Tropic level**
- Vertical distribution of a different species, occupying a different level are called– **Stratification**
- In terrestrial, food chain major amount of energy flow occurs through– **DFC (Detritus Food Chain) than GFC (Grazing Food Chain)**
- In an ecosystem, the function of the producers is to– **Trap solar energy and convert it into chemical energy**
- In aquatic food chain, major amount of energy flows through– **GFC**
- When peacock eats snake which eats insects depends on green plants, the peacock is– **The apex of the food pyramid**
- Food chain refers to– **The transfer of food energy from producers to consumers**
- Ascending trophic level in grazing (grass land) food chain pyramid represents– **Gradual decrease in biomass from producers to the tertiary consumer**

12.5 Ecological Pyramids

- Both hydrarch and xerarch successions lead to– **Medium water conditions**
- If 20 J of energy is trapped at producer level, then how much energy will be available to peacock as food in the chain– Plant→Mice→Snake→Peacock– **0.02 J**
- Pyramid of number in a grassland ecosystem is– **Upright**
- The pyramid of biomass in sea is generally– **Inverted**
- Rate of increase in biomass by heterotrophs or consumers per unit time and area is– **Secondary productivity**
- Inverted ecological pyramid– **Pyramid of biomass in sea**
- The pyramid of biomass in a pond ecosystem is– **Inverted**
- In a pyramid of numbers representing an ecosystem of a large freshwater pond the number of primary consumers is– **Less than the producers**
- The age distribution is plotted for a population, the resulting structure is called– **Age pyramid**
- Number of female on 1000 males - **Sex ratio**
- Age pyramid reflects a stable population growth– **Bell shaped**
- Polygonal pyramid indicates moderate percentage of young individuals - **Bell - shaped**
- Primary carnivores belong to– **T_3**
- In a single tree ecosystem, if P, Q, R and S represents the smaller birds, tree, insects and larger birds respectively, then which will be second most abundant in number– **P**
- In an aquatic ecosystem, a mollusc typically belongs to– **T_2**
- Secondary carnivores feed on the members of– **T_2**
- Omnivores feed upon the members belonging to– **T_1 and T_2 both**
- Pyramid of numbers deals with number of– **Individuals in a trophic level**
- Pyramid of number is– **Either upright or inverted**
- The food energy passes from one trophic level to another trophic level mostly from– **Lower to higher trophic levels**

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- ..... food chain is directly dependent upon solar radiations– **Grazing, Detritus**
- In a pyramid of numbers representing an ecosystem of a large freshwater pond, the number of primary consumers are– **Less than the producers**
- Construction of ecological pyramids is not used for– **Fresh weight**

12.6 Ecological Succession

- The stable community during an ecological succession that would be near equilibrium with the environment is called– **Climax community**
- Primary succession occurs on– **Newly formed river delta**
- As the succession proceeds number and types of ..... change– **Vegetation, animals & decomposers**
- The rate of secondary succession is faster than primary succession because– **Soil or sediment is already present**
- Pioneer community in xerarch is– **Lichens**
- The correct sequence of stages of succession on a bare rock is– **Lichens→Moses→Grasses→Shrubs→Trees**
- In xerach succession, lichens make the conditions favourable for the growth of– **Mosses**
- The successional series in hydrarch succession progresses from– **Hydric to mesic conditions**
- An ecosystem which can be easily damaged but can recover after some time if damaging effect stops, will be having– **Low stability and high resilience**
- All type of successions leads to– **Mesic climax community**
- The gradual and fairy predictable change in the species composition of a given area is called– **Ecological succession**
- Ecological succession usually focuses on– **Change Vegetation**
- The serial changes in previously sterile or total barren area is called– **Primary succession**
- It occurs on a deforested site are - **Secondary succession**
- Lichen is pioneer in succession of– **Xerosere**
- Primary succession is development of communities on– **Previously unoccupied sites**
- The change leads finally to a community that is near equilibrium with the environment is known as– **Climax community**
- The entire sequence of communities that successively change in given area are called– **Sere**
- Succession in a 6 metre deep pond exhibits a sequence of– **Submerged Plants → Floating Plants → Reeds → Herbs → Shrubs → Trees**
- The name given to the medium water conditions in succession of plants is– **Mesic**
- Take hold in small amount of soil is– **Bryophytes**
- In a primary succession, initially– **No soil was there**
- Present day communities in world are the result of succession that has occurred since– **Millions of years since life has started on earth**
- Primary succession is observed in– **Newly cooled lava**
- In an ecological succession, saprophytes belong to– **Either T_2 or T_3**
- Number of seral communities are more in primary succession in comparison to– **secondary succession**
- Any disturbance during succession– **Encourage the growth of some species, Make some species extinct**
- In a pond, autotrophic component include– **Phytoplanktons, algae and marginal plants**
- Meant by the term 'hydrarch' is– **Succession in a wet area**
- If hydric conditions are P, xeric condition are Q and mesic condition are R, then xerarch succession can be represented as– **Q → R**
- Succession in water ultimately results in– **Mesic conditions**
- Climax community in xerarch succession comprises of– **Shrubs and trees**

12.7 Nutrient Cycling

- The pairs of sedimentary biogeochemical cycles– **Phosphorus cycle, Sulphur cycle**
- The function of reservoir pool is to meet with the deficit of nutrient that occurs due to– **Imbalance in rate of efflux and influx of nutrients**
- About 71% of total global carbon is found in– **Oceans**
- Percentage of total global carbon is atmospheric carbon– **1%**
- Major source of sulphur is– **Rocks**
- The processes that does not contribute to the CO_2 pool in the atmosphere– **Photosynthesis by producers**

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- Sedimentary biogeochemical cycle is– **Phosphorous and sulphur**
- Out of the total cost of various ecosystem services the soil formation accounts for about– **50%**
- Nutrients are never lost from the ecosystem because– **They are recycled again and again**
- Atmospheric phase plays no role in biogeochemical cycling of– **Phosphorus**
- The process of mineralisation by microorganisms helps in the release of– **Inorganic nutrients from humus**
- The function of reservoir pool is to meet with the deficit of nutrient that occurs due to– **Imbalance in rate of efflux and influx of nutrients**
- The phosphorous cycle differs from those of carbon and nitrogen as well as those of oxygen and hydrogen cycle in that it lacks– **Gaseous phase**
- A sedimentary cycle is– **Phosphorous**
- The major reservoir of phosphorous cycle is– **Pollution**
- The characteristics of the soil that determine the percolation and water holding capacity of the soil– **Soil composition, grain size and aggregation**
- Additional sources for releasing carbon dioxide in the atmosphere are– **Burning of wood, Volcanic activity, Combustion of fossil fuels**
- Gaseous biochemical cycle in ecosystem is not a– **Phosphorus cycle**
- Biogeochemical cycling means– **Cycling of nutrients in an ecosystem**
- Carbon cycling can occur through– **Ocean, Dead organisms, Atmosphere**
- The natural reservoir of phosphorus is– **Rock**

12.8 Ecosystem Services

- Characteristic feature of cropland ecosystem is– **Least genetic diversity**
- The reservoir for the gaseous type of biogeochemical cycle exists in– **Atmosphere**
- If the carbon atoms fixed by producers already have passed through three species, the trophic level of the last species would be– **Tertiary consumer**
- The types that ecosystem is expected in an area where evaporation exceeds precipitation, and mean annual rainfall is below 100 mm– **Desert**
- The zone at the edge of a lake or ocean which is alternatively exposed to air and immersed in water is called– **Littoral zone**
- Edaphic factor refers to– **Soil**
- Pollination of crop, Maintenance of biodiversity, Spiritual, cultural & aesthetic values include– **The ecosystem services**
- Out of the total proposed cost of various ecosystem services, cost of climate regulations and habitat for wildlife are about ..... each– **6%**
- Rise in the temperature and air humidity observed from poles to equator region during - **Latitudinal transition**
- _____ is the most important ecologically relevant environment factor– **Temperature**
- Who put the price tag on natural life support services– **Robert Constanza**
- The amount of average price tag on nature's life support services determined by Robert constanza and his colleagues– **US $ 33 trillion a year**

12.9 Miscellaneous

- Decomposers like fungi and bacteria are– **Heterotrophs, Saprotrophs**
- The process of mineralization by microorganisms helps in the release of– **Inorganic nutrients from humus**
- Productivity is the rate of production of biomass expressed in terms of– **$g^{-2}\ yr^{-1}$, (kcal m^{-2}) yr^{-1}**
- It is not a producer– **Agaricus**
- Primary productivity of a terrestrial ecosystem is eaten and digested by herbivores– **10%**
- Among the following biogeochemical cycles which one does not have losses due to respiration– **Phosphorus, Nitrogen, Sulphur**
- The sequence of communities of primary succession in water is– **Phytoplankton, free-floating hydrophytes, rooted hydrophytes, sedges, grasses and trees**
- The reservoir for the gaseous type of biogeochemical cycle exists in– **Atmosphere**
- If the carbon atoms fixed by producers already have passed through three species, the trophic level of the last species would be– **Tetiary consumer**
- An ecosystem service provided by a natural ecosystem is– **Cycling of nutrients, Prevention of soil erosion**
- Accelerate phosphorus cycle will– **Weathering of rocks**
- The amount of nutrients, such as carbon nitrogen, phosphorus and calcium present in the soil at any given time is referred as– **Standing state**
- Ecological pyramids is generally inverted– **Pyramid of biomass in a sea**

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EXAM POINT

Ecosystem and its structure	
The temperature of water in epilimnion of a thermally stratified lake in summer in temperate is– **21°C - 25°C**	**AP EAPCET-11.05.2023, Shift-II**
In a lake ecosystem, Dytiscus comes under– **Nekton**	**AP EAPCET-11.05.2023, Shift-II**
Limiting nutrient for both natural and agricultural ecosystems is– **Nitrogen**	**AP EAPCET-11.05.2023, Shift-II**
Unit of land containing different ecosystems surrounded by natural boundaries is called– **Landscape**	**AP EAPCET-11.05.2023, Shift-I**
In 'rivet popper hypothesis', Paul Ehrlich compared the rivets in an airplane to– **Species within a genus**	**RE-NEET (UG)-06.06.2023 (Manipur)**
The purpose of crop rotation is– **To increase the fertility of soil**	**Uttarakhand PMT-2008 / BHU PMT-2004, UP CPMT-2003**
Vertical distribution of different species occupying different levels in a biotic community is known as– **Stratification**	**AIPMT-2015**
Number of wild life is continuously decreasing. The main reason of this– **Destruction of habitat**	**AIPMT-2002**
Eutrophication is caused due to– **Accumulation of minerals**	**JIPMER-2019**
Keystone species is a– **A species which makes up only a small proportional of the total biomass of a community, yet has a huge impact on the community's organization and survival**	**AIIMS-2008**
The Great Barrier Reef along the east coast of Australia can be categorised as– **Ecosystem**	**AIIMS-2004**
Amazon Rain Forest is known as– **Lungs of our Planet**	**AP EAMCET-24.09.2020 Shift-I**
Ecosystem is the symbol of structure and function of nature. It proposed by– **Tansley**	**AP EAMCET-24.09.2020 Shift-I, UPCPMT-2002**
The species, though insignificant in number, determine the existence of many other species in a given ecosystem. Such species is known as– **Keystone species**	**Karnataka CET-2010**
Benthic organisms are found in– **Bottom of sea**	**JIPMER-2014**
Overlapping region between two ecosystems is called– **Ecotone**	**JIPMER-2014, Rajasthan PMT-2009**
Supports a dense population of plankton and littoral vegetation– **Eutrophic**	**JIPMER-2014**
Stability of ecosystem depends upon– **Interchange between producers and consumers**	**JIPMER-2014**
The organisms that belong to the benthos of lake ecosystem– **Chironomid larvae and red annelids**	**AP EAMCET-2013**
Terracing is done in– **Hilly areas**	**UPCPMT-2002**
Aquatic photodiffraction is– **Euphotic, disphotic and aphotic**	**UPCPMT-2002**
The reason for highest biomass in aquatic ecosystem is– **Benthic and brown algae**	**AIPMT-2000**
The animals may occupy more than one trophic levels in the same ecosystem at the same time is– **Sparrow**	**AIPMT (Mains)-2011**

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The primary consumer in maize field ecosystem is– **Grasshopper**	**NEET (Karnataka)-2013**
Biotic and abiotic components form– **Community**	**AIPMT-1999**
World Summit on Sustainable Development (2002) was held in– **South Africa**	**AIPMT-2008**
Productivity	
In a population, when the growth rate reached to its maximum it is called– **Biotic potential**	**JCECE-2015 / AIPMT-2002**
The expected to have the highest value ($gm/m^2/yr$) in a ecosystem is– **Gross Production (GP)**	**CMC Ludhiana-2009 / AFMC-2008 / AIPMT-2004**
The amount of biomass or organic matter produced per unit area over a time period by plants during photosynthesis is called– **Primary production**	**NEET (Re-Exam)-04.09.2022 /, TS EAMCET-09.05.2019 Shift-I**
In an ecosystem the rate of production of organic matter during photosynthesis is termed as– **Gross primary productivity**	**NEET-2020 Phase-I, AIPMT-2015**
The mass of living material at a trophic level at a particular time is called– **Standing crop**	**AIPMT-2015**
In a growing population of a country– **Pre-reproductive individuals are more than the reproductive individuals**	**NEET-2018**
Secondary productivity is Rate of formation of new organic matter by– **Consumer**	**AP EAMCET-07.09.2021 Shift-I, NEET-2013**
The ecosystem has the maximum biomass is– **Forest ecosystem**	**NEET-2017**
The rate of formation of new organic matter by rabbit in a grassland, is called– **Secondary productivity**	**AIPMT (Mains)-2012**
The energy which is present in the biomass of plant is known as– **Net primary productivity**	**GUJCET-2017**
The biomass available for consumption by the herbivores and the decomposers is called – **Net primary productivity**	**AIPMT (Screening)-2010, 2007**
The ecosystem has the highest annual net primary productivity is– **Tropical rain forest**	**Karnataka CET-2019**
Decomposition and Flow of Energy	
Increase in toxic concentration from one trophic level to another trophic level is called– **Biomagnification**	**Haryana PMT-2005 / JIPMER-2005, BHU PMT-2003**
Fungi in a forest ecosystem is– **Decomposer**	**DUMET-2005 / UP CPMT-2003**
Energy enters in a food chain through– **Producers**	**AP EAMCET-24.09.2020 Shift-II / Punjab MET-2009, CMC Vellore-2009 / Rajasthan PMT-2009, UP CPMT-2003, 2001 / DUMET-2005,2001**
A lake with nutrients is called– **Eutrophic**	**JIPMER-2008 / BHU PMT (Screening)-2007**
Energy transferred from one trophic level to another is– **10%**	**VMMC-2012 / UP CPMT-2012, 2008, Manipal-2010,2001 / CG PMT-2008, Rajasthan PMT-2008 / BHU PMT (Main)-2007**

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Decomposers are– **Heterotrophs**	**VMMC-2012 / BHU PMT (Mains)-2008, UP CPMT-2008 / JCECE-2005, BHU PMT-2001 / Manipal-2000**
If decomposers are removed what will happen to the ecosystem– **Mineral cycle is stopped**	**Haryana PMT-2005 / JIPMER-2005**
The rate of decomposition is faster in the ecosystem due to factors EXCEPT– **Detritus richer in lignin and chitin**	**NEET-2020 Phase-II, NEET-2022**
The primary producers of the deep-sea hydrothermal vent ecosystem are– **Chemosynthetic bacteria**	**NEET-2016 Phase-II**
Bamboo plant is growing in a far forest then what will be the trophic level of it– **First trophic level (T_1)**	**AIPMT-2002**
Detritivores breakdown detritus into smaller particles. This process is called– **Fragmentation**	**NEET-2022**
The processes during decomposition is correctly described– Fragmentation – **Carried out by organisms such as earthworm**	**NEET-2013**
Most animals that live in deep oceanic water are– **Detritivores**	**AIIMS-2016**
The bacteria which attack dead animals are– **The end of food chain and are decomposers**	**AIIMS-2008**
Full form of GFC is– **Grazing food chain**	**AIIMS-27.05.2018 Shift-I**
The stage in the process of decomposition Bacteria and Fungi become active in **Catabolism**	**GUJCET-2018**
Biomagnifications refers to– **Increase in concentration of the toxicant at successive trophic levels**	**AIIMS-27.05.2018 Shift-I**
Detritivore is called as a– **An animal feeding on decaying organic matter**	**Karnataka CET-2005**
The average trophic efficiency of transfer of energy from one trophic level to the higher trophic level is called– **Lindeman's trophic efficiency rule**	**AP EAMCET-2008**
During the process of decomposition in which stage complex organic matter convert into inorganic ions and salts by fungi– **Mineralization**	**GUJCET-2015**
'Sun basket' is– **The sufficient amount of sunlight stored in a cell**	**JIPMER-2014**
A detrivorous animal of economic importance is– **Earthworm**	**Karnataka CET-2008**
the primary producer in ecosystem– **Flora found on land and water ecosystem**	**UP CPMT-2014**
Most diverse organisms of an ecosystem are– **Decomposers**	**AP EAMCET-25.04.2018 Shift-II / UP CPMT-2011, 2006**
The highly degraded organic matter rich in nitrogen and potassium in particular, resulting from the activity of earthworms, is called– **Vermicompost**	**Karnataka CET-2006**
Increase in the concentration of a pollutant at successive trophic levels in an aquatic food chain is called– **Bio-magnification**	**TS EAMCET-09.05.2019 Shift-I**
Trophic level of food chain having greatest amount of energy is– **Autotrophs**	**UP CPMT-2006**
These belong to the category of primary consumers– **Insects and cattle**	**Karnataka CET-2004**
The characteristic features of cropland ecosystem is– **Least genetic diversity**	**NEET-2016 Phase-I**
The types of organisms occupy more than one trophic level in a pond ecosystem is– **Fish**	**Punjab MET-2010, AIPMT-2009**
In terrestrial ecosystem such as forest, maximum energy is found in the trophic level is– **T_1**	**JIPMER-2004**

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At which latitude, heat gain through insolation approximately equals heat loss, through terrestrial radiation– **40º North and South**	**JIPMER-2007**
When man eats fish which feeds on zooplankton which have eaten small plants, the producer in the chain is– **Small plants**	**NEET (Karnataka)-2013**
Pyramids of Ecology	
Certain characteristic Demographic features of developing countries are– **High fertility, low or rapidly falling mortality rate, rapid population growth and a very young age distribution**	**AIPMT-2004**
Mr. X is eating curd/yogurt, for this food intake in a food chain he should be considered as occupying– **Third trophic level**	**AIIMS-2003**
In a pyramid of numbers representing an ecosystem of a large fresh water pond the number of primary consumers is– **More than the secondary consumers**	**AP EAMCET-1998**
The pyramid of energy is always upright for any ecosystem. This situation indicates the fact that– **Herbivores have a better energy conversion efficiency than carnivores**	**Karnataka CET-2005**
Net primary productivity (NPP) in an ecosystem is– **GPP–R = NPP**	**Karnataka CET-2018**
The tropic relationship is expressed in terms of numbers : biomass or energy arranged one on the top of its lower tropic level, resulting in a pyramidal shape. In case of a parasitic food chain, the pyramid number is– **Inverted**	**AP EAMCET-03.09.2021 Shift-I**
The pyramids that is always upright and can never be inverted is– **Pyramid of energy**	**UP CPMT-2011**
The rate of formation of new organic matter by deer in a forest ecosystem is called– **Secondary productivity**	**Karnataka CET-2016**
Pyramid of energy is always– **Upright**	**UPCPMT-2002**
The upright pyramid of number is absent in– **Forest**	**AIPMT (Screening)-2012**
The age pyramid with broad base indicates– **High percentage of young individuals**	**NEET (Karnataka)-2013**
Ecological Succession	
Lichen is the pioneer vegetation on the succession that is– **Lithosere**	**VMMC-2012 / Rajasthan PMT-2008, UP CPMT-2012, 2008 / CG PMT-2008, BHU PMT (Screeining)-2006**
The evergreen vegetation and drough adapted animal is– **Chaparral**	**BHU PMT (Mains)-2009**
The second stage of hydrosere is occupied by plants like– **Vallisneria**	**AIPMT (Mains)-2012**
All successions irrespective of the habitat proceed to the type of climax community is– **Mesic**	**NEET (Re-Exam)-04.09.2022**
The species that come to appear in bare area are called– **Pioneer species**	**NEET (Re-Exam)-04.09.2022**
The pioneer species in a hydrarch succession are– **Phytoplanktons**	**NEET (Re-Exam)-04.09.2022**
Secondary Succession takes place on/in– **Degraded forest**	**AIPMT-2015**
The region of Biosphere Reserve which is legally protected and where no human activity is allowed is known as– **Core zone**	**NEET-2017**
Niche overlap indicates– **Sharing of one or more resources between the two species**	**AIPMT-2006**
According to IUCN Red List, the status of Red Panda (Ailurus fulgens) is– **Endangered species**	**AIPMT-2005**
Two opposite forces operate in the growth and development of every population. One of them relates to the ability to reproduce at a given rate. The force opposing it is called– **Environmental resistance**	**AIPMT-2003**

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Intermediate community between pioneer and climax communities is called– **Seral community**	**JIPMER-2011**
The vegetation of Rajasthan is– **Xerophytic**	**VMMC-2004**
Plants which behave as mesophytes in rainy season and as xerophytes in summers are called– **Trophophytes**	**Punjab MET-2005**
Ephemerals are xerophytes that are– **Drought escaping**	**Punjab MET-2005**
A place was rocky and barren but now there is a green forest; the sequence of origin is– **Lichen, moss, herbs, shrubs**	**Rajasthan PMT-2005**
In hydroseric succession, the stage tht comes just before sedge meadow stage is– **Reed swamp stage**	**GUJCET-2017**
The organisms which invade a bare area to initiate an ecological succession are known as– **Pioneer species**	**Karnataka CET-2020**
Appear as the pioneer organisms on bare rocks is– **Lichens**	**NEET-2016 Phase-I**
Cycling of Nutrient in Ecosystem	
The role of bacteria in carbon cycle is– **Decomposition of organic compounds**	**AIIMS-2000**
The simplest of all nutrient cycles operating in an ecosystem is ___cycle– **Phosphorous**	**MHT CET-2017**
Accelerate phosphorus cycle is– **Weathering of rocks**	**NEET-2022**
The natural cycling of carbon between organism and their environment is directly accomplished through– **Photosynthesis and respiration**	**Uttarakhand PMT-2006**
Reservoirs for Phosphorous and Nitrogen cycle respectively are– **Bedrocks and atmosphere**	**GUJCET-2008**
Eutrophication is seen in– **Lake**	**DUMET-2002**
Biogeochemical cycle of which element has atmospheric phase– **Carbon**	**DUMET-2002**
Fishes in eutrophic lake is died due to– **Lack of oxygen**	**AIIMS-27.05.2018 Shift-II**
Animals take phosphorus from– **Plants**	**AIIMS-2010**
A sedimentary biogeochemical cycle having gaseous phase is– **Sulphur**	**MP PMT-2013**
Biogeochemical Cycle having a small gaseous component is found in– **Sulphur**	**AP EAMCET-24.09.2020 Shift-I**
In the phosphorus cycle, weathering makes phosphate available first to– **Producers**	**Punjab MET-2004**
The main role of bacteria in the carbon cycle involves– **Digestion or breakdown of organic compounds**	**Punjab MET-2010**
About 70% of total global carbon is found in– **Oceans**	**AIPMT-2008**
A nitrogen fixing microbe associated with Azolla in rice-field is– **Anabaena**	**AIPMT (Screening)-2012**
The microbes forms symbiotic association with plants and helps them in their nutrition– **Glomus**	**AIPMT (Screening)-2012**
Nitrogen fixing bacteria converts– **$N_2 \rightarrow NH_3$**	**AIPMT-1999**
Services of Ecosystem	
An ecosystem which can be easily damaged but can recover after some time if damaging effect stops will be having– **Low stability and high resilience**	**AIPMT-2004**
According to Robert Constanza, 50% the total cost for ecosystem services goes to– **Soil formation**	**Karnataka CET-2015, Kerala PMT-2014**
Total number of matured trees that are required to support supply of oxygen to 42,000 people in a year– **21000**	**TS EAMCET-09.08.2021 Shift-II**

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13.

BIODIVERSITY AND CONSERVATION

13.1 Biodiversity

- The countries that has the highest biodiversity– **Brazil**
- Invasive alien species is not an– **Cynodon**
- Where among the will you find pitcher plant– **Rainforest of North-East India**
- The one-horned rhinoceros is specific to which of the sanctuary– **Kaziranga**
- Amongst the animal groups given below, which one has the highest percentage of endangered species– **Amphibians**
- Endangered plant species of India is– **Rauwolfia serpentina, Cycas beddonei**
- The extinction of passenger pigeon was due to– **Over exploitation by humans**
- Among the ecosystem mentioned below, where can one find maximum biodiversity– **Coral reefs**
- The forests that is known as the 'lungs of the planet earth'– **Amazon rainforest**
- The active chemical drug reserpine is obtained from– **Rauwolfia**
- The group that exhibit more species diversity– **Fungi**
- The regions that exhibit less seasonal variations– **Tropics**
- The historic convention on Biological Diversity held in Rio de Janeiro in 1992 is known as– **The Earth Summit**
- The term biodiversity is popularised by– **Edward Wilson**
- variations affect the production of the drug reserpine in the medicinal plant Rauwolfia vomitoria growing in different Himalayan ranges. The kind that diversity does it indicate– **Genetic diversity**
- Western ghats have a greater number of amphibian species than the Eastern ghats. The kind that diversity does it represent– **Species diversity**
- India has a greater ecosystem diversity than a Scandinavian country like Norway. The kind that diversity does it represent– **Ecological diversity**
- The correct hierarchical levels of biodiversity from higher to lower is– **Ecosystem or community diversity→species diversity→genetic diversity**
- The presence of different types of genes in different species, Existence of genetically different strains/ variety of same species refers to– **Genetic diversity**
- A more conservative and scientifically sound estimate about the total number of species present on earth, was made by– **Robert may**
- The total number that species present on earth as estimated by Robert May– **7 million**
- India is one of the megadiversity countries of the world– **12**
- The approximate number of plant and animal species recorded in India are– **54,000 plant species and 102,718 animal species**
- According to May's global estimates how many species of plants and animals, respectively, are yet to be discovered and described from India– **1,00,000 and 3,00,000**
- In general, species diversity ..... as one moves from high to low altitudes– **Increases**
- Species diversity decreases as we move away from the ..... towards ..... **equator, poles**
- Tropics (23.5^0N to $23.5^0$5) have ..... species as compared to temperate or polar regions– **More**
- For frugivorous birds and mammals in the tropical forests of different continents, the slope of species area relationship is found to be– **1.15**
- ..... confirmed that communities with more species tend to be more stable than those with less species– **David Tilman**
- Rivet popper hypothesis was given by– **Paul Ehrlich**
- Organisation responsible for maintaining Red list is– **IUCN**
- Red Data book deals with– **Endangered and extinct organisms**
- How many species are documented to be extinct in last 500 years by IUCN Red List, 2004– **784**
- Bali, Javan and Caspian are– **Subspecies of tiger**
- Dodo, an extinct flightless bird, belonged to– **Mauritius**
- IUCN Red List (2004) documents the extinction of ..... vertebrates in the last 500 years– **338**
- Organisms got extinct from Africa– **Quagga**
- The impact of loss of biodiversity include..... Lowered resistance to environmental perturbations– **Decline in plant production**
- The term "the evil quartet" is related with four major causes of– **Biodiversity losses**
- An exotic species that is introduced to a new area, spreads rapidly and eliminates native species is called– **Invasive species**
- Introduction of Nile Perch in lake Victoria of East Africa resulted in– **Elimination of many species of cichlid fish**

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- The fish that is being illegally introduced for aquaculture purposes and is posing a threat to the indigenous catfishes of Indian rivers– **Clarias gariepinus**
- Introduction of alien species into new area possess a threat to extinction of indigenous species due to **Absence of their natural predators**
- There are four major causes of accelerated rates of species extinction, which are collectively called as 'the evil quarter'. One of the not included in 'the evil quartet'– **Pollution**
- When a species becomes extinct, the plant and animal species associated with it in an obligatory way also become extinct. This phenomenon is referred to as– **Co-extinction**
- World Summit on sustainable development held in 2002 in– **Johennesburg**
- Among vertebrates, maximum species diversity belong to a taxon, known as– **Fishes**
- Species diversity _____ as one moves from higher to lower altitude– **Increases**
- Frugivorous birds and mammals in the tropical forests of different continents, the slope is found to be– **1.15**
- All the species are neither threatened nor indigenous specie of India - **Lantana, Eichhornia and African Catfish**
- The right sequence for Ecological diversity is– **Biomes → Ecosystem → Habitat → Niches**
- *Rauwolfia vomitoria* is an example of– **Genetic diversity**
- Rain forest, Mangroves, and coral reefs has great– **Ecological diversity**
- "Species richness increased with increased explored area but only a limit". This statement was given by– **Alexander Von Humboldt**
- Genetic diversity refers to– **The differences in alleles within species**
- According to IUCN (2004), total number of plant species describe on earth are around– **1.5 million**
- "Increased diversity contribute increased productivity" this statement is given by– **Tilman**
- The pattern of biodiversity is affected by– **Latitudinal gradients, Species-area relationships**
- Species of ants are present on earth– **15,700**
- Red data book provides data on– **Endangered plants and animals**
- If the present rate of extinction of species continues, almost half of the species on earth will be lost in next– **100 years**
- Ecosystem diversity is– **Variation in species diversity in ecosystem**
- Presently many species are facing threat of extinction. This is true for– **Every 4th mammalian species**
- The reason is responsbile for extinction of host fish and parasites– **Co-extinctions**
- According to most biologists, most of the species waiting to be discovered are in– **Tropical climate**
- The member of 'The Evil Quartet' is– **Co-extinction, Over-exploitation, Alien species invasion**
- IUCN means– **International union for conservation of nature and natural resources**
- Half of the vertebrate species belong to– **Fishes**
- The slope of graph between species richness and area is– **Rectangular hyperbola**
- Hypothesis support the existence of greater biological diversity in tropics than temperates, except– **Presence of seasonal variation in tropics**
- The most important reason for the decrease in biodiversity is– **Habitat-destruction and fragmentation**
- In Rivert Popper Hypothesis' of Paul Ehrlich, loss of key species driving an ecosystem is indicated by– **Removing the rivets from wings**
- According to 'Rivet Popper Hypothesis', the airplane will becomes dangerously weak if– **Popping of rivets continue**
- India constitutes .....% of the world's land area and contributes .....% of the global species diversity– **2.4, 8.1**
- The result of loss of biodiversity is not– **Increase in resistance against drought**
- If A-Species richness and B-Endemism, then biodiversity hotspots have– **High degree of A and high degree of B**
- A weeds has invaded many forest lands of India is– **Parthenium, Lantana**
- Narrowly utilitarian, Broadly utilitarian and ethical reasons behind _____ have been grouped into categories- **Conserving biodiversity**
- _____ is the exploration of molecular, genetic and species-level diversity for gaining the products of economic importance– **Bioprospecting**
- Amazon rainforests contribute ____ of the total oxygen in the earth's atmosphere– **20%**
- Waking up to a bulbul's song in the morning is related to– **Broadly utilitarian**
- Introduction of Clarius gariepinus in aquaculture in India is a serious threat to extinction of– **Native cat fish**
- Endemic plants are those– **Restricted to certain area**
- The most biodiversity rich zone in India is– **Western Ghats**
- _____ is included under ecosystem services– **Climate control, protection of soil**
- Genetically different strains of mango are reported from India– **1,000**
- _____ exhibit less seasonal variations– **Tropics**
- Decline in plant production, Lowered resistance to environmental perturbations such as drought and increased variability in certain ecological processes- **Loss of biodiversity**
- Tropical environments, unlike temperature ones, are less seasonal, relatively more constant and predictable. Such constant environment promote– **Niche specialization and speciation**

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- Protect whole ecosystem conversion - **In situ**
- In a field experiment, when all the starfish were removed from an enclosed intertidal area, more than 10 species of invertebrates become extinct within a year, because– **Inter specific competition**
- ____ is an example of recently extinct species from Australia– **Thylacine**
- The species confined to a particular region and not found elsewhere is termed as– **Endemic**
- Biodiversity of a geographical region represents– **The diversity in the organisms living in the region**
- Alexander von Humboldt described for the first time– **Species area relationships**
- The distribution of species diversity on earth may be best described as– **It is highest in tropics**
- Red list contains data or information on– **Threatened species**
- Invasive species is not an– **Ocimum sanctum**
- In-situ conservation refers to– **Protect and conserve the whole ecosystem**

13.2 Biodiversity Conservation

- Biodiversity loss is not responsible for– **Ex-situ conservation**
- ..... is not a method of in situ conservation of biodiversity– **Botanical garden**
- Ex-situ conservation of threatened animal and plants is related to– **Wildlife safari parks**
- The National Aquatic Animal of India is– **Ganga River dolphin**
- More than 25% of drugs are derived from plants. The kind that benefit does this describe– **Direct economic value**
- Ex situ conservation is used for the conservation of– **Threatened animals and plants**
- Conservation in the natural habitat is– **in situ**
- Presently, total number of biodiversity hotspots in the world is– **36**
- The biodiversity hotspots of India is not included in– **North Indian Plains**
- The pair that geographical area shows maximum diversity in our country– **Eastern Himalayas and Western Ghats**
- In a National park, protection is provided to– **Entire ecosystem**
- Wildlife conservation is done in– **ex situ conservation, in situ conservation**
- Zoos, seed banks, wildlife safari parks, botanical gardens include– **Ex situ strategies**
- Cryopreservation of gametes of threatened species in viable and fertile condition can be referred to as– **Advanced ex situ conservation of biodiversity**
- The regions that sacred groves are found in Meghalaya– **Jaintia and Khasi Hills**
- Botanical gardens represent– **ex situ conservation**
- Cryopreservation is the preservation of germplasm at very low temperature or around– **– 196°C**
- Western Ghats of India are considered as hot spot because– **They are mega diversity zone**
- Loss of biodiversity in a region may lead to– **Decline in plant production**
- Last refuges for a large number of rare and threatened plants in Meghalaya– **Sacred groves**
- Just as a person moving from Delhi to Shimla, escape the heat for the duration of hot summer, thousands of migratory birds from Siberia and other extremely cold northern regions move to– **Keolado National Park**
- Hot-spot of biodiversity in India is– **Western Ghats**
- How many ecological hotspots are present in India– **Three**
- 'Ex situ' conservation is the term applied to– **Breeding of endangered species in zoological parks**
- Plant based product is not a– **Leather**
- More than 25% of drugs are derived from plants, what kind of benefit does this describe– **Direct Economic value**
- Hot spots of bioiversity are areas with– **Maximum biodiversity**
- Wild life conservation means the protection and preservation of– **All livings in natural habitat**
- Western Ghats have come under the category of Hotspot because of– **High endemism**
- Example of ex-situ conservation is–**Zoological park**
- In a National Park, protection is provided to– **Flora and Fauna**
- Tropical forests are denser due to– **High temperature and high rain**
- Example of in situ conservation is– **Biosphere reserve**
- 'Hot spot' is not found in India– **South central China**
- The earth's land area is covered when all the biodiversity hotspots put together, percent of– **Less than 2%**
- Appropriate method for conservation of wild life is– **Conservation in natural habitat**
- National parks have been established till now in India– **90**
- In India, there are– **14 = Biosphere reserves, 90 = National parks, 448 = Wild life santuaries**
- Biodiversity is of importance as it offers– **Stability of ecosystems**

13.3 Miscellaneous

- Countries has the highest biodiversity is– **South America**
- You find pitcher plant among will– **Rain forest of North-East India**
- Major characteristic feature of biodiversity hot spots is not a– **Mostly located in the polar regions**
- The common to the plants Nepenthes, Psilotum, Rauwolfia and Aconitum is– **All are prone to over exploitation**
- The one-horned rhinoceros is specific to the sanctuary– **Kaziranga**

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EXAM POINT

The Term Biodiversity	
The presence of diversity at the junction of territories of two different habitats is known as– **Edge effect**	**VMMC-2012 / UP CPMT-2008**
Regional diversity is also called– **Beta diversity**	**AP EAMCET-03.09.2021 Shift-II**
…… has maximum genetically different strains in India– **Rice**	**NEET (Karnataka)-2013 / AIPMT (Screening)-2011**
Acacia, Prosopis and Capparis belongs to– **Thorn forest**	**AIPMT-1998**
Species separated by geographical barriers are called– **Allopatric**	**AIPMT-1998**
……. pair is of insectivorous plants– **Allobandra and Utricularia**	**AIPMT-1999**
Species diversity is maximum in– **Tropical rain forest**	**AIPMT-1999**
Occurence of endemic species in South America and Australia due to– **Continental separation**	**AIPMT-2001**
Extranuclear inheritance occurs in– **Paramecium**	**AIPMT-2001**
Large Woody Vines are more commonly found in– **Tropical rainforests**	**AIPMT (Screening)-2011**
Patterns of Biodiversity	
According to David Tilman's long term ecosystem experiments, the total biomass in plots with more species shows– **Less variation from year - to - year**	**Karnataka CET-20.05.2023**
…….. regions of the globe exhibits highest species diversity– **Amazon forests**	**NEET-2020 Phase-I**
According to Robert May, the global species diversity is about– **7 million**	**NEET-2020 Phase-I**
Total number of hotspots of biodiversity in the world have been identified till date by Norman Myers is– **34**	**NEET-2016 Phase-II**
The amount of nutrients, such as carbon, nitrogen, phosphorus and calcium present in the soil at any given time, is referred as– **Standing state**	**NEET-2021**
Decline in the population of Indian native fishes due to introduction of Clarias gariepinus in river Yamuna can be categorised as– **Alien species invasion**	**NEET (Odisha)-2019**
Exploration of molecular, genetic and species level diversity for novel products of economic importance is known as– **Bioprospecting**	**NEET (Odisha)-2019**
Maximum number of species among global biodiversity is represents– **Fungi**	**NEET-2013**
The pairs of an animal and a plant represents endangered organisms in India– **Bentinckia nicobarica and Red Panda**	**AIPMT-2006**
Beta diversity is the diversity– **Between communities**	**WB JEE-2015 / AIIMS-2007**
In India, we find mangoes with different flavours, colours, fibre content, sugar content and even shelf-life. The large variation is on account of– **Genetic diversity**	**AIIMS-2006**
The highest diversity in India is– **Mango**	**AIIMS-2010 / AIPMT-2009**
The geographical areas show maximum biodiversity in our country– **Eastern Himalaya and Western Ghats**	**AIIMS-2005**
The species diversity decreases from lower to higher altitudes on a mountain. This is due to– **Decrease in temperature, Greater seasonal variability**	**AIIMS-2014**

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India is one of the twelve megadiversity countries with____of genetic resources of the world– **8.1%**	**AIIMS-2013**
Hotspots of biodiversity in India refers to– **Western Ghats and Sri Lanka, Indo Burma and Himalaya**	**AIIMS-26.05.2018 Shift-II / AIPMT (Screening)-2012**
The diversity which is richness of different species in a range of habitats within a geological area in known as– **γ (gamma) diversity**	**GUJCET-2018**
Biodiversity of a geographical region represents– **The diversity in the organisms living in the region**	**AIPMT (Mains)-2011**
Benthic organisms are affected most by– **Sediment characteristics of aquatic ecosystems**	**NEET (Karnataka)-2013**
Temperature variation in Pacific ocean in present time is called– **El Nino effect**	**AIPMT-1998**
Shannon's index (H) represents– **Relative abundance of each species**	**AP EAMCET-2010**
Biodiversity Losses	
Biodiversity losses is caused by– **Climate change**	**RE-NEET (UG)-06.06.2023 (Manipur), AIPMT (Screening)-2010**
Number of wild life is continuously decreasing. The main reason of this– **Destruction of habitat**	**AIPMT-2002**
Habitat loss and fragmentation, over exploitation, alien species invasion and co-extinction are causes for– **Biodiversity loss**	**NEET-2022 / Kerala PMT-2008**
The species, which is going to become extinct due to lack of proper care would be called– **Endangered**	**JIPMER-2005**
If the high altitude birds become rare or extinct, the plants which may disappear along with them are– **Rhododendrons**	**AIIMS-2004**
If the Bengal Tiger becomes extinct– **Its gene pool will be lost forever**	**AIIMS-2004 / Haryana PMT-2004**
Most of the endangered species are the victims of– **Habitat destruction**	**Karnataka CET-2009**
One of endangered species of Indian medicinal plants is that of– **Podophyllum**	**AIPMT-2007**
In Red Data Book of IUCN, the endangered species are represented on– **Red**	**UP CPMT-2014**
The most important cause of animals and plants being driven to extinction– **Habitat loss and fragmentation**	**NEET-2016, 2019 Phase-I**
According to IUCN red list, the status of red Panda (Ailurus fulgens) is– **Endangered species**	**JIPMER-2007**
Recently extinct animal from India is– **Acinonyx**	**AIPMT-1999**
Conservation of Biodiversity	
The first National Park in India is– **Jim Corbett National Park**	**TS EAMCET 10.05.2023 Shift-I**
Red List contains data or information on– **Threatened species**	**NEET-2016 Phase-II**
The National Parks that is home to the famous musk deer or hangul– **Dachigam National Park, Jammu and Kashmir**	**NEET-2016 Phase-II**
The World Summit on sustainable development held in 2002 in Johannesburg, South Africa pledged for– **A significant reduction in the current rate of biodiversity loss**	**NEET (Re-Exam)-04.09.2022**

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The most effective way to conserve the plant diversity of an area– **By creating biosphere reserve**	**Manipal-2007, AIPMT-2004**
The Earth Summit held in Rio de Janeiro in 1992 was called–**For conservation of biodiversity and sustainable utilization of its benefits**	**NEET-2019**
The UN Conference of Parties on climate change in the year 2011 was held in– **South Africa**	**AIPMT-2015**
The UN conference of Parties on climate change in the year 2012 was held at– **Doha**	**AIPMT (Re-Exam)-2015**
The organization That publishes the Red List of species is **IUCN**	**AIPMT-2014**
A species facing extremely high risk of extinction in the immediate future is called– **Critically Endangered**	**AIPMT-2014**
Biodiversity Act of India was passed by the Parliament in the year– **2002**	**AFMC-2009 / JIPMER-2007, CG PMT-2006 / AIPMT-2005**
Keystone species deserve protection because these– **Play an important role in supporting other species**	**AIIMS-2006**
For better survival of human Indian population, which is the most important step– **Afforestation**	**AIIMS-2011**
MAB stands for– **Man and biosphere programme**	**WBJEE-2015 / AIPMT-1997 / Rajasthan PMT-1995**
The breeding place of Flamingo (Hansawar) in India is most likely– **Rann of Kutch in Gujrat**	**AIPMT-1996**
The historic convention related to conservation of biological diversity is also known as– **Earth Summit**	**Karnataka CET-2019**
Core zone, buffer zone and manipulation zone are found in– **Biosphere reserves**	**JIPMER-2012**
Bio-indicators are used for– **Oxygen demand, Air pollution, Mineral present**	**JIPMER-2008**

In situ Conservation and Ex-situ Conservation

In-situ conservation refers to– **Protect and conserve the whole ecosystem**	**NEET-2022**
Just as a person moving from Delhi to Shimla to escape the heat for the duration of hot summer, thousands of migratory birds from Siberia and other extremely cold northern regions move to– **Keoladeo National Park**	**AIPMT-2014**
An example of ex-situ conservation is– **Seed Bank**	**AIPMT-2014**
Ex-situ conservation of threatened animals and plants is related to– **Wildlife Safari parks**	**NEET-2017**
Periyar sanctuary is located in– **Kerala**	**J&K CET-2009 / JIPMER-2005**
Indian rhinoceros are protected in– **Kaziranga National Park**	**Karnataka CET-2010 / AIPMT (Mains)-2010, JIPMER-2008 / Karnataka CET-2004**
Biosphere reserves differ from National Parks and Wildlife sanctuaries because in the former– **People are an integral part of the system**	**AIIMS-2006**
One of the ex situ conservation methods for endangered species is– **Cryopreservation**	**JCECE-2017, 2009 / CMC Ludhiana-2009, AFMC-2008 / AIIMS-2005**
Newly formed Biosphere Reserve of India (2013) is– **Panna Biosphere Reserve**	**JIPMER-2014**

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